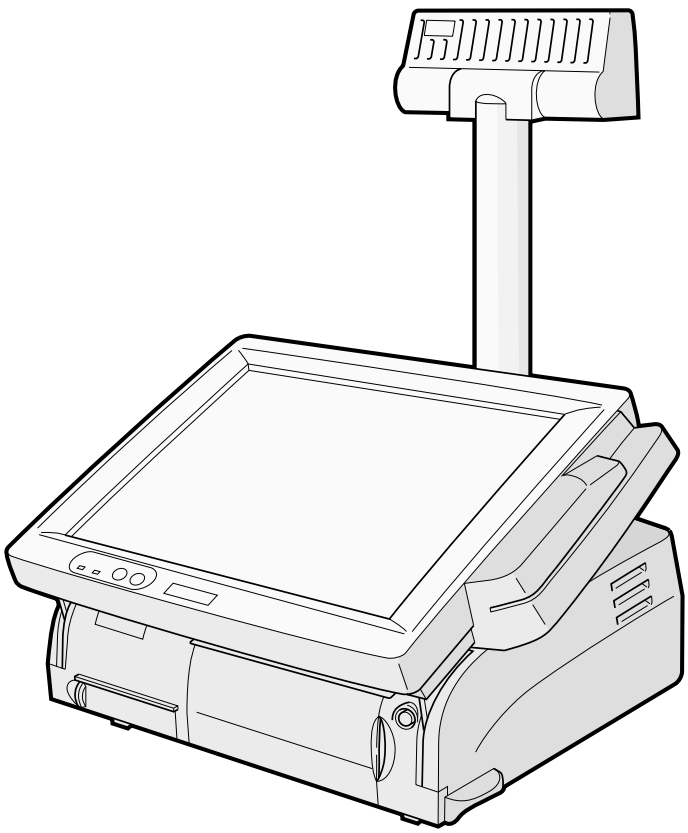
Confidential

Developer's Guide

SR-600

Issued date	, ,
Issued by	



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Revision Information

Revision	Page	Altered Item and Contents
Rev. A		

Warnings, Cautions, and Notes

Notes and precautions in this manual are identified as defined below.

⚠ *WARNING:*

Provides information that must be followed carefully to avoid bodily injury.

⚠ *CAUTION:*

Provides information that must be observed to prevent damage to the equipment or loss of data.

- ❏ *Possibility of sustaining physical injuries.*
- ❏ *Possibility of causing physical damages.*
- ❏ *Possibility of causing information loss.*

✎ ***Note:***

Provides important information and useful tips on handling the equipment.

Safety Precautions

This section presents important information intended to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

⚠ *WARNING:*

- ❏ Turn off the main power switch immediately and unplug the power cord if the SR-600 produces smoke, a strange odor, or unusual noise. Continued use may lead to fire or electric shock. Contact your dealer or an EPSON service center for advice.
- ❏ Never attempt to repair this product yourself. Improper repair work can be dangerous.
- ❏ Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.
- ❏ Be sure to use the specified power supply. Using an unsuitable power supply may cause fire or electric shock.
- ❏ Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock.
- ❏ Do not allow foreign objects to fall into this product. Penetration by foreign objects may lead to fire or shock.
- ❏ Do not plug too many leads into a single socket. It may lead to fire.
- ❏ Handle the power cord with care. Improper handling may lead to fire or shock.
- ❏ Do not modify or attempt to repair the cord.
  - Do not process the power cord.
  - Do not place any object on top of the cord.
  - Avoid excessive bending, twisting, and pulling.
  - Do not place the cord near heating equipment.
  - Check that the plug is clean before plugging it in.
  - Be sure to push the prongs all the way in.

⚠ CAUTION:

- ❏ Be sure your power cable meets the relevant safety standards and includes a power-system ground terminal (PE terminal). Improper interconnections may lead to crash or fire.
- ❏ Be sure to set this product on a firm, stable and horizontal surface. The product may break or cause injury if it falls.
- ❏ Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage, fire, or shock.
- ❏ Do not place multiple loads on the power outlet (wall outlet). Overloading the outlet may lead to fire.
- ❏ To ensure safety, unplug this product prior to leaving it unused for an extended period.

✎ ***Note:***

- ❏ Be sure to use the EPSON supplied DIMM, HDD and CPU.
- ❏ To get the lastest information about which Compact Flash and PCI board can be used with this product, contact your EPSON dealer.

Note for Maintenance, Repair, and Inspection

⚠ WARNING:

- ❏ Wear a ground wristlet to prevent the system failure from the static electricity during the handling of the internal circuit board.
- ❏ If you remove the internal circuit board, place the circuit board on the antistatic rubber surface or equivalent product to prevent the system failure from the static electricity.
- ❏ Handle the power cord with care, improper handling may lead to fire.
- ❏ Do not modify or attempt to repair the cord.
- ❏ Do not operate the maintenance, repairing or inspection to avoid the electric shock when it's thunderstorming.
- ❏ It is possible that the temperature of the circuit board device is high. Besure to wait for about 10 minutes after turned off the power to handle the circuit board device.
- ❏ Do not give the circuit board impacts or vibrations. It may result in the system failure.
- ❏ Do not touch the circuit board or cable terminals. It may cause the system failure from the dirt.

- Never clean the product with thinner, benzene, alcohol or other such solvent. It may result in deformation or breakage of the plastic and rubber made supplies of this product.
- Clean this product with dry or wettish fabric. Be sure to unplug the power cord before clean this product.

Note for Deacquisition

Note:
Follow the country(or local) law and the regulation for the disposal of this product.

Modular Type Connector

Be careful not to cut your finger on any edge of he unit.The Caution label as shown below is sticked around the three modular type connector on the rear and bottom sides of this product.

CAUTION:

The modular type connector is used as a dedicated connector for cash drawer or customer display. Do not connect it with the public circuits, Network, or LAN. It does not operate as an Ethernet Connector.

Guide Configuration

Aim of the Manual

This manual was created to provide information on the SR-600 for anyone who is developing programs, and setting upthe optional supplies and the printer.

Contents of the Manual

The configurations of this manual is summarized in the table below.

Chapter 1 "General Features"	Gives descriptions of SR-600 and the parts names.
Chapter 2 "OS and Driver Setup"	Gives descriptions of the OS and the Driver compliant with each OS.
Chapter 3 "BIOS Setup"	Gives descriptions of the BIOS, POST, and the Device Diagnostic Utility.
Chapter 4 "Driver / Utility Specifications"	Gives specifications for the Drivers and Utilities.
Chapter 5 "Hardware Specifications"	Gives specifications for the Hardware configurations and the optional supplies.
Chapter 6 "Peripherals/Option Installation"	Gives specifications for the optional peripherals and setup.
Appendix 1 "Interfaces"	Gives specifications for all the interfaces.
Appendix 2 "Power Management"	Gives specifications for the Power Management Function.
Appendix 3 "Wake On LAN"	Gives specifications for the Wake On LAN function.
Appendix 4 "COM3 Mode"	Gives descriptions of the COM3 Mode.

Related Manuals

Related Manuals

Name	Contents
SR-600 User's Manual	Gives basic handling guidelines of SR-600.
SR-600 Service Manual	Gives guidelines for anyone who supports and repairs SR-600.

Chapter 1
General Features

Features of the product

Hardware Configurations

The SR-600 is an intelligent terminal developed for the POS environment.

The SR-600 has the following features:

- ❑ A high speed Intel Celeron processor provides the power and speed necessary for data processing.
- ❑ Using it with a variety of options and peripheral devices allows you to construct a system that suits your needs best.
- ❑ Designed with a stylish color and shape, it is waterproof and easy to care for.
- ❑ The lock on the front cover allows only the key owner to take out a CD-ROM.
- ❑ The power management function supplies only the amount of power necessary for data processing, assuring optimum power saving.
- ❑ Use of PC / AT compatible BIOS.
- ❑ Support of Plug & Play function. (Windows 98 / 2000 only)
- ❑ Wake up function can be available over a LAN.
- ❑ Use of design consistent with the EPSON POS system DM series Customer Display. A customer display can be mounted on the SR-600, so it does not occupy much space.
- ❑ Two disk spaces are provided for HDD, CD-ROM, and / or CompactFlash.
- ❑ A 2.5-inch hard disk drive can be stored in hard disk drive.
- ❑ The PC-based open architecture with a PCI slot increases system expandability.
- ❑ Three serial ports, one parallel port, and two USB port allow connection of peripheral devices, increasing system expandability.
- ❑ An Ethernet controller can be used to 100Base-TX or 10Base-T.
- ❑ A CompactFlash board can be installed.
- ❑ The built-in IBM PS 2 keyboard port supports IBM PC / AT compatible keyboards.
- ❑ A CD-ROM drive can be installed.
- ❑ LCD unit (option) is a 12.1-inch TFT with Touch Panel or can be selected from DSTN, which allows you to make a free layout for the application screen.
- ❑ A 2MB video memory is internally equipped using a PCI video controller.

Software Configurations

BIOS setup

BIOS setup defines your system configuration. When you set up the product for the first time, run this program to set the system environment. When you want to change the operating environment, run this program again. For details on BIOS setup, refer to “Chapter 3, BIOS Setup.”

Device self-diagnosis utility

Device self-diagnosis utility performs a test on each devices and functions of the SR-600. For details on device self-diagnosis utility, refer to “Chapter 3, BIOS Setup.”

Operating System

The SR-600 runs on the standard Microsoft ® operating systems:

- Windows 95
- Windows 98
- Windows NT Workstation 4.0
- MS-DOS 6.2
- Windows 2000 Professional (It'll be available in the near future.)

Peripheral Devices

The SR-600 can be configured with the following optional units:

- ❑ LCD units
  12.1" color DSTN — Model Name DM-LS121S
  12.1" color TFT — Model Name DM-LS121T

- ❑ MSR units
  ISO I track 1,2,3 — Model NameDM-MS123

- ❑ Floppy disk drive
  3.5" 720KB / 1.44MB — Model Name OI-S01

- ❑ CD-ROM drive — Model Name OI-S02

- ❑ Drawer board
  Cash drawer x 2 port
  CRT x 1 port — Model Name OI-B08

- ❑ CompactFlash board
  For HDD attachment — Model Name OI-S03-012
  For CD-ROM attachment — Model Name OI-S03-022

Part Names

Front View

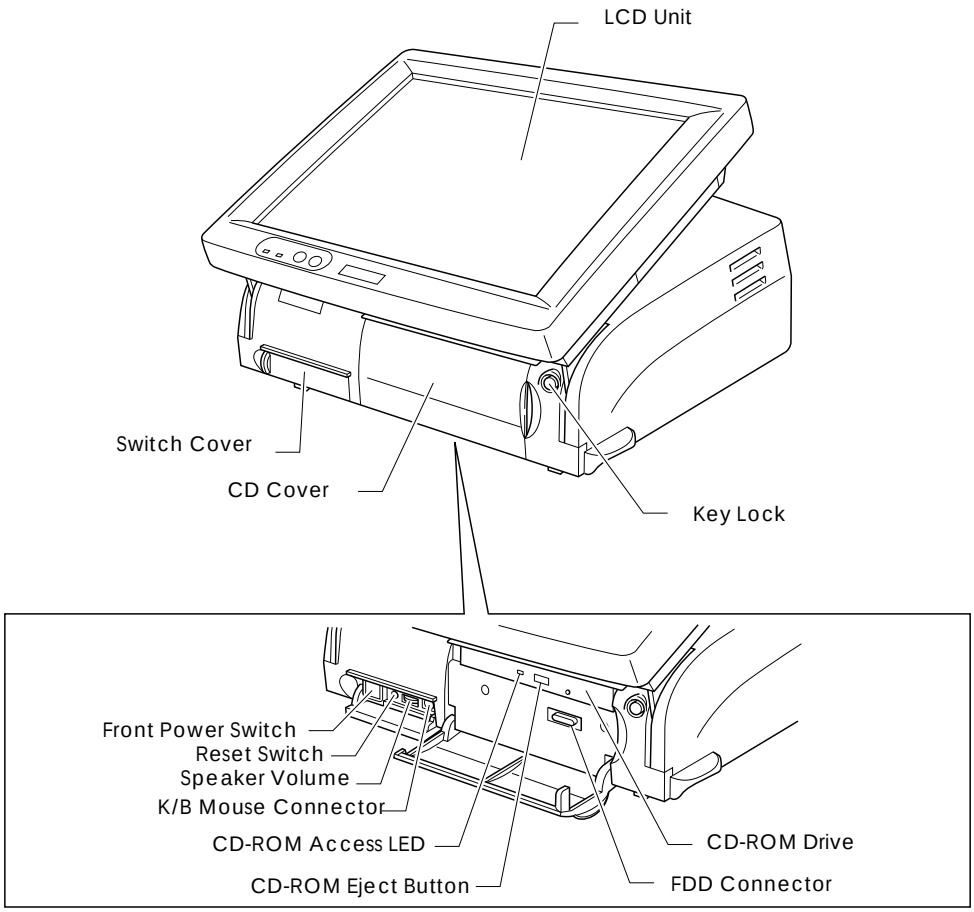


Figure 1-1 Front views of the SR-600

DM-LS121S

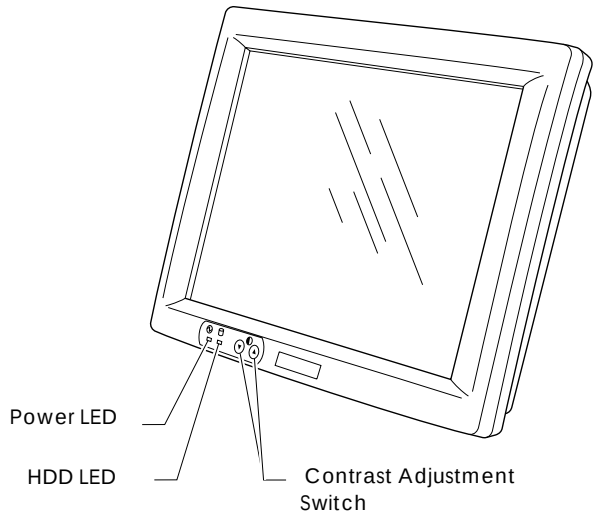


Figure 1-2 External views of the DM-LS121S

DM-LS121T

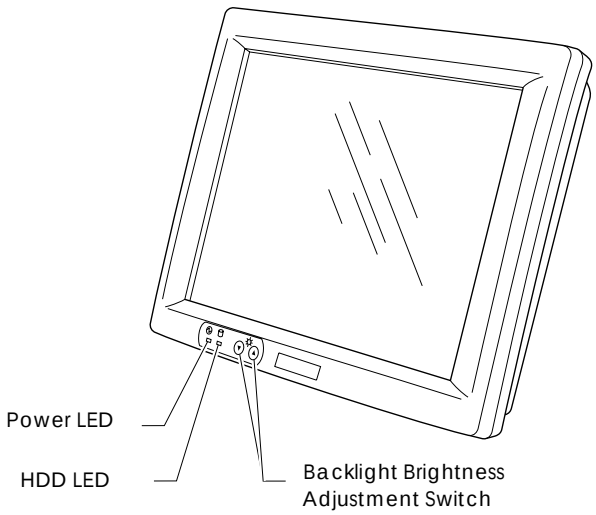


Figure 1-3 External views of the DM-LS121T

Rear View

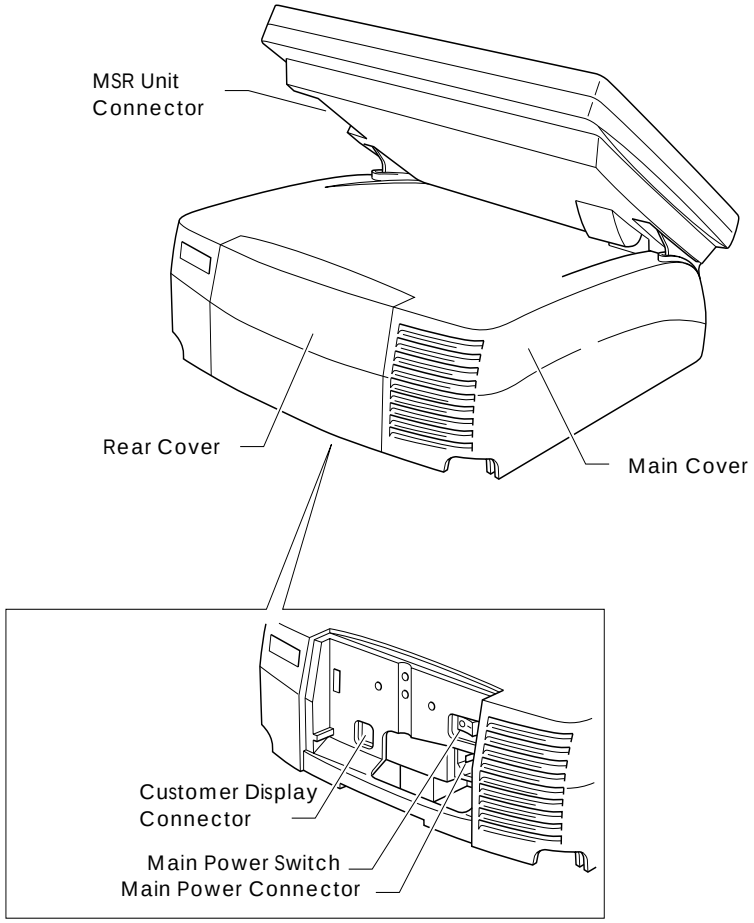


Figure 1-4 Rear views of the SR-600

Bottom View

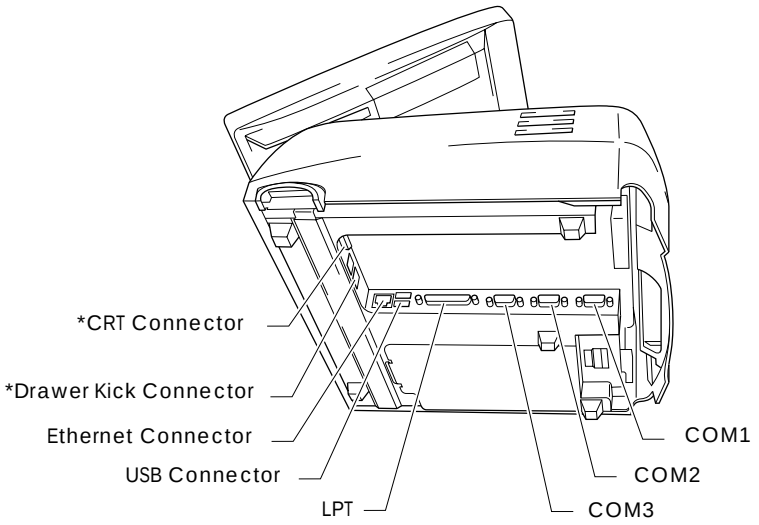


Figure 1-5 Bottom views of the SR-600

* CRT and drawer kick connector is used if the optional CRT/drawer board is installed.

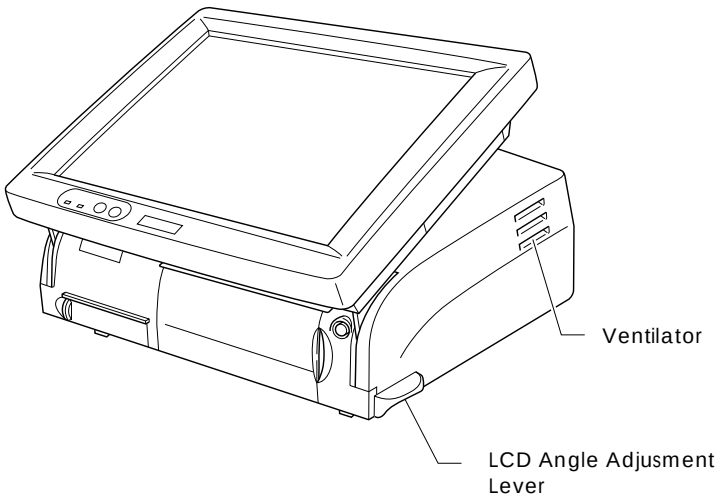


Figure 1-6 Side views of the SR-600

Switches

- Front power switch

  The front power switch is a push type switch on the bottom of the left side corner under the switch cover. It turns on and off the system. The front power switch is placed under the front cover to prevent the operation mistake from being turning off accidentally. It changes the front power status of SR-600 to power on, standby, or off. The functionality of the front power switch is determined by BIOS Setup utiliy.

- Main power switch

  The main power switch on the back of the SR-600 isolates the AC line voltage from the power supply. Remove the rear cover to turn on and off the main power. During the normal use, this switch is left on.

- Reset Switch

  The reset switch under the switch cover by the right side of the front power switch resets the hardware of the SR-600. If the system hangs for any reason and cannot recover, pressing this switch restarts the system.

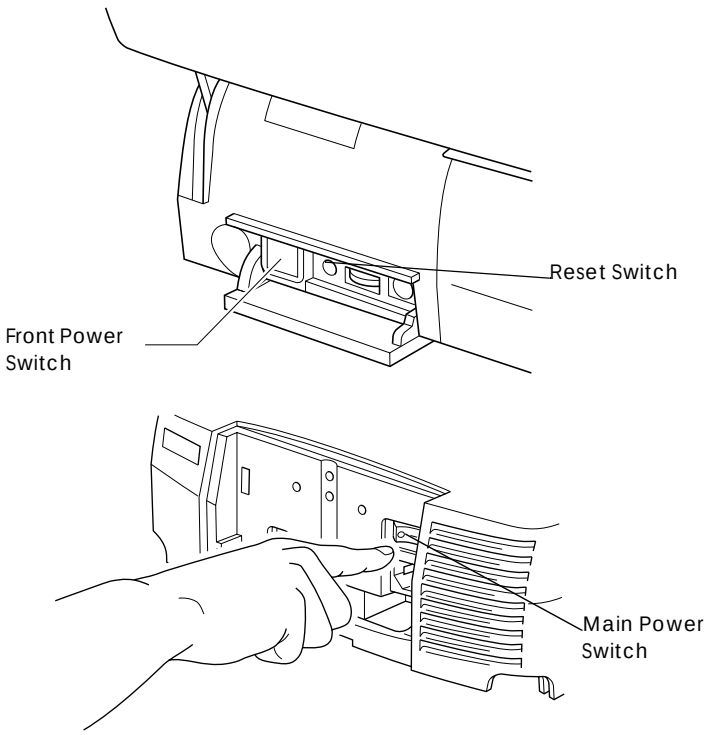


Figure 1-7 Switch locations

Indicators

- Power LED

  The power LED on the LCD unit indicates the on / off status of the power supply. The table below shows the colors of the LED and its meaning.

  Table 1-1 Power LED colors and their meaning shows the colors

LED color	Meaning when illuminated
Green	Power supply is on (during normal operations)
Orange	Power is suspended
Off	Power is off

- HDD LED

  HDD LED (Green) on the LCD unit indicates the access status of the HDD or CF. The meaning of the LED is same in all the units.
  It also lights while accessing to other devices (CD-ROM or CF) which connected to Primary IDE.

- CD-ROM Access LED

  CD-ROM access LED on the CD-ROM unit lights green while the CD-ROM is being accessed.

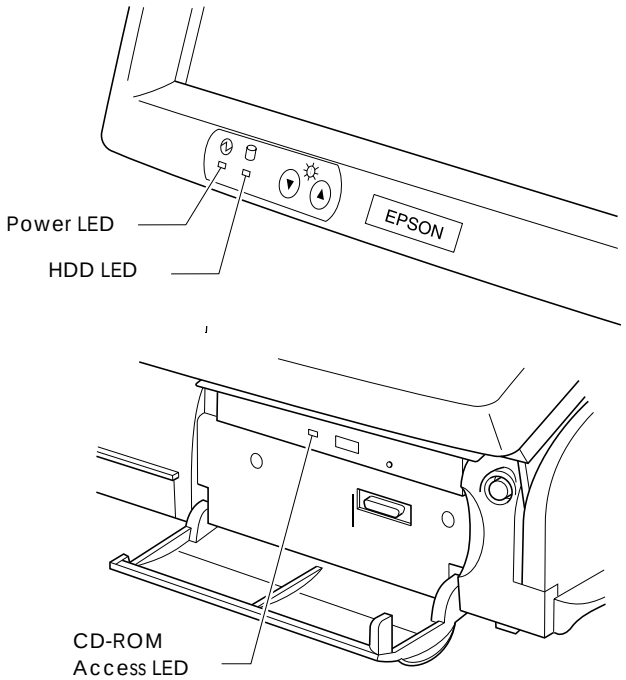
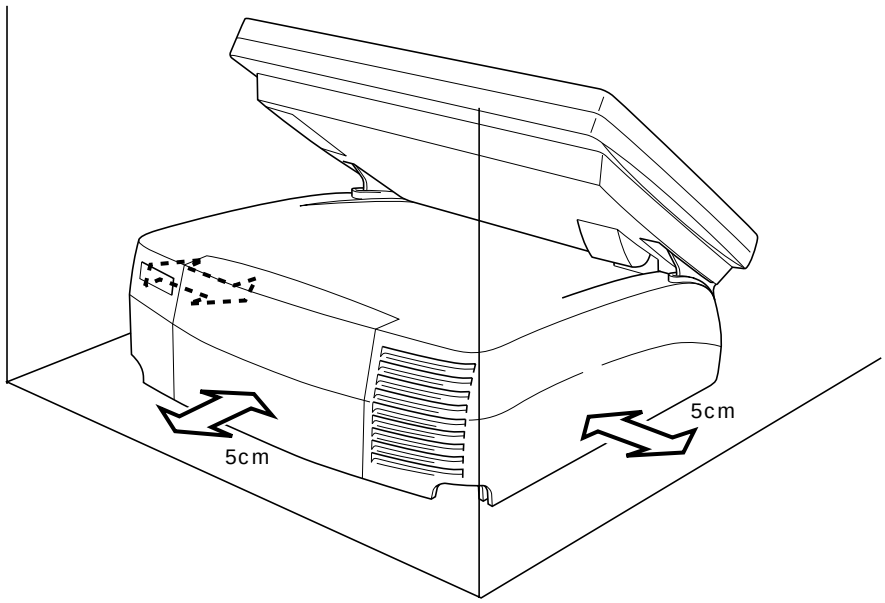


Figure 1-8 Location of LEDs

Required Clearance



Chapter 2
OS and Driver Setup

Supporting OS

SR-600 is supported with following OS listed below.

- MS-DOS 6.2 (See section 2-1.)
- Microsoft Windows 95 (See section 2-4.)
- Microsoft Windows 98 (See section 2-9.)
- Microsoft Windows NT Workstation 4.0 (See section 2-13.)
- Microsoft Windows 2000 (It will be supported in the near future) (See section 2-20.)

MS-DOS

Accompanying Software

The software listed below is pre-installed in the system. The utilities setup is not performed. Also, the language indicated in the parentheses is available. If your language for the utilities is not available, English is used instead. For example, English version of DM-MS series utility setting is attached as a substitute for French version of MS-DOS.

- Microsoft MS-DOS 6.2 (Japanese and other language edition : 6.20/V

  Foreign edition : 6.22)
- Fujitsu Touch Panel Driver 1.0 (English)
- Realtec Network Driver 3.80 (English)
- Matsushita CD-ROM Driver 98/05/08 version (Japanese/English)
- EPSON DM-MSE series Setup Utility 1.00 (English)

Directory Configurations

The directory configurations of Pre-installed HD Setup Drive are as follows. Volume label for Japanese edition is "MS-DOS_6", and for other languages is "MS-DOS_6_22". Required capacity is approximately 7MB.

```
\                                   : Bootup File
+-- BACKUP
|    +-- CDROM                      : CD-ROM Driver Backup
|    +-- MSRCFG                     : DM-MS series Setup Utility
|    +-- NETWORK                    : Network Driver Backup
|    |    +-- MSLANMAN
|    |    |    +-- DRIVERS
|    |    |    |    +-- ETHERNET
|    |    |    |    |    +-- RTL8139
|    |    |    |    +-- NIF
|    |    |    +-- NWCLIENT
|    |    |    |    +-- DOS
|    +-- TOUCH                      : Touch Panel Driver Backup
+--DOS                              : System File
```

Refer to “HDVER.TAG” on the Setup Drive root to confirm the HD version. The contents is as follows. This file is saved in Text format and can check from the EDIT. Available LANG (language) is Japanese, English, German, French, Italian, Spanish, Dutch, Korean, Chinese Traditional, or Chinese Simplified. VER (Version) is organized in three sets of number combination such as "1.00.1".

```
[HD Information]
MODEL=IM-600
OS=MS-DOS6.2
LANG=English
VER=1.00.1
```

Touch Panel Driver

The Touch Panel Driver is not installed when this unit is shipped. Simple Batch File for copying is available. Copy it from the backup directory to use. Move the Batch File to “C:\BACKUP\TOUCH" and type the command written below to start installation.

```
INSTALL C:\TOUCH[Enter]
```

The directory where the file is copying to can be specified to the parameter as an option, and also can be omitted. If it is omitted, the file is copied to “C:\TOUCH". It automatically copies the file and completes the file copying.

Type the command written below on the prompt to install the driver.

MEDVSTD I10,P2E8,B96[Enter]

Parameter “I10" specifies IRQ 10, “P2E8" specifies I/O address 2E8h, and “B96" specifies Baud Rate 9600.

The calibration method is as follows.

1. Move to the Touch Panel directory.
2. Type “EPCAL” then press [Enter]. Calibration utility starts.
3. Click on the points on the [+] character. The [+] character is displayed sequentially in nine places on the screen (Top : left / middle / right, Middle : left / middle / right, Low : left / middle / right).
4. It automatically exits the utility when the procedure is completed.

Network Driver

The driver for Microsoft Lan Manager is stored in “C:\BACKUP\NETWORK\MSLANMAN" directory, and the driver for Novell Netware is stored in “C:\BACKUP\NETWORK\NWCLIENT” directory. The installation instruction is indicated in “MSLANMAN/MSLANMAN.TXT” for Microsoft Lan Manager Drive, and “NWCLIENT/NWODIDOS.TXT” for Novell Netware Drive. Refer to those instructions for the installation. The directories explained above is for backup and is not a directory configuration of the document. Make sure to create an appropriate directory, then proceed the copying of the file.

CD-ROM Driver

The CD-ROM Driver is not installed when this unit is shipped. Follow the steps below to install the CD-ROM Driver.

1. Start “C:\BACKUP\CDROM\INSTALL.EXE”.
2. The Installation Menu Screen is displayed.
   Ordinarily, item 2 is selected.
3. “AUTOEXE.BAT” Updated Selection screen is displayed.
   Press “Y" then [Enter].
4. Start the searching of the fie then exit.
   The searching of the file is a required process for Windows, but not necessary for MS-DOS.

Windows 95

Accompanying Software

The software listed below is pre-installed in the system. The language indicated in the parentheses is available. All the languages are not prepared for the utilities. English is used as a substitute for unavailable languages. For example, English version of DM-MS series utility setting is attached as a substitute for French version of MS-DOS.

- Microsoft Windows 95 950B (OSR2.1, all available languages)
- Microsoft Windows 95 Supplement (USB Supplement / Y2K Supplement / MS-IME97 / IME 97 Updater / IrDA INF File etc, each languages)
- INTEL Chipset INF Utility 2.20.0006 (English)[Note 1]
- EPSON Touch Panel Driver 1.00 (English)
- Chipset & Technologies Display Driver 4.11.01.2500 (all available languages)
- Realtec Network Driver 5.374.0214.2000 (English)[Note 2]
- EPSON DM-MS series Setup Utility 1.00 (Win version, English), 1.00 (DOS version, English)[Note 2]
- EPSON Logon Utility 1.02 (English)[Note 2]
- EPSON OPOS ADK 1.96 (Japanese / English)[Note 2]
- EPSON TM Driver 2.01 (Japanese / English / Chinese Traditional / Chinese Simplified)[Note 2]

[Note 1]Required to recognize the bridge, USB Controller, and IDE Controller. Set up is completed.
[Note 2]It is not setup.

Directory Configurations

The directory configurations of setup drive are as follows. Volume label is "Windows 95" and the initial required capacity is approximately 400MB.

```
\                              : Bootup File, Version File (Note 1)
+-- BACKUP
|    +-- CHIPSET               : Chipset INF Utility Backup
|    +-- MSRCFG                : MSR Setup Utility Backup
|    |    +-- DOS              :  for DOS
|    |    +-- WIN              :  for Windows
|    +-- LOGON                 : Software Keyboard Utility Backup
|    +-- NETWORK               : Network Driver Backup
|    +-- OPOSADK               : OPOS ADK Backup
|    +-- RECOVERY              : Recovery Media Backup
|    |    +-- DATA
|    |    |    +-- RESTORE
|    |    +-- BOOTFD
|    |         +-- DATA
|    +-- TOUCH                 : Touch Panel Driver Backup
|    +-- TMDRV                 : TM/DM Driver Backup
|    +-- VIDEO                 : Video Driver Backup
|    +-- WIN95SUP              : Supplement Backup
+-- ProgramFiles               : Windows 95 Utility
+-- WINDOWS                    : Windows 95 File
```

Note 1)The contents of Version File (HDVER.TAG) are as follows.

```
[HD Information]
MODEL=IM-600: Model Name
OS=Windows95: OS Name
LANG=English: Language = English
                         Japanese
                         German
                         French
                         Italian
                         Spanish
                         Dutch
                         Korean
                         Chinese Traditional
                         Chinese Simplified
```

Initial Setup

The environment setting is proceeded following the steps below when you turn on the PC.

1. The program prompts you to enter the Windows owner's name and the comapny name. Enter the names and press the Next button.

2. The Software Licensing Agreement is displayed. Check on the [Agree] radio box and press the Next button.

3. The program prompts you to enter the Product Key. Enter the product key listed on the front page of First Step Guide contained in the COA(Certificate of Authenticity) package supplied with OS package, then press the Next button.

4. Information data input is completed. Press the [Done] button.

5. Set the Date, Time, and Time Zone.
   Make sure to set the correct date and time. The standard setting may not match with your environment.

6. Printer setup.
   It is not necessary to setup the printer here. You can setup the printer later.

7. Tour utility is executed.
   The document about the Y2K is displayed after the execution of tour utility. Read the document and install it if it's necessary.

⚠ *CAUTION:*

65536 colors is already set for DSTN LCD model same as TFT LCD model.

It performs setup for SR-600 when it is initially setting up. Therefore, it takes additional 20 to 30 seconds to display the Windows desktop.

Device recognition is performed for the initial setup depending on the system configuration (change in system configuration, not connectiing PS2 Mouse, etc). It may require a Driver file depending on the device. Follow the installation steps below or the manual comes with device for the installation.

From the second setup, the warning dialog "Mouse is not conncted" appears. Check on the check box and click [OK]. The dialog does not appear from the next setup.

Chipset INF Utility Installation

Follow the steps below to install the Chipset INF Utility:

1. Start C:\BACKUP\CHIPSET\SETUP.EXE.
   Welcome Screen is displayed.

2. Click on the [Next] button.
   The Software License Agreement Screen is displayed.

3. Click on [Yes]button, only if you agree with the agreement.
   The Readme Screen is displayed.

4. Read the text and click on [Next] button.
   Then copying of file is executed. The Setup Complete Screen is displayed when the copy is completed.

5. Select "Yes, I want to restart ...." , then click on [Finish] button.

6. It reboots the system and starts the Device Recognition.
   IDE Device Wizard Screen is displayed.

7. Click on [Next] button.

8. Wizard finds Driver from the Inf Folder. Click on [Finish] button.

9. The program finds the Primary and Secondary IDE Controllers, and the computer reboot. Confirmation Screen is displayed. Click on [No] button and continue with the Wizard.

10. Desktop is displayd and the Computer Reboot Confirmation Screen appears when a device recognition is completed. Click on [Yes] button and reboot the system.

Display Driver Installation

Follow the steps below to install the Display Driver.

1. Start C:\BACKUP\VIDEO\W95500.EXE.
   The Welcome Screen is displayed.

2. Click on [Next]button.
   The Software License Agreement is displayed.

3. Click on [Yes]button, only if you agree with the agreement.
   Then copying of file is executed. The Setup Complete Screen is displayed when the copy is completed.

4. Select "Yes, I want to restart ...." , then click on [Finish] button.

5. It reboots the system.
   Change the settings from the [Control Panel:Display Properties:Settings Tab] if necessary.

Network Driver Installation

Follow the steps below to install the Network Driver.

1. Network Device is found and the Wizard Screen is displayed during the Windows Bootup. Click on [Yes]button.

2. Driver is not found, if it is the initial installation of the Network Driver. Click on [Other Locations]button. Select Other Location Screen is displayed. Type C:\BACKUP\NETWORK and click on [OK]button.

3. Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC is found. Click on [Finish]button.

4. Copying of Files Screen is displayed. Type C:\BACKUP\NETWORK, and click on [OK]button. It starts the Driver installation.

5. The program prompts you to enter “Computer Name" and “Workgroup Name”. Click on [OK]button.
   The Network Screen is displayed.

6. Enter an appropriate Computer Name and Workgroup Name. Click on [Close]button.

7. If it requests the Windows CD-ROM, type C:\WINDOWS\OPTIONS\CABS and click on [OK]button.

8. The program prompts you to reboot the system after the driver installation. Click on [Yes]button and reboot the system.
   After reboot the system, the Enter Network Password Screen is displayed.

9. Enter an appropriate User Name and Password. Click on [OK]button.
   The Password Check Screen is displayed.

10. Enter the Password again and click on [OK]button.

Windows 98

Accompanying Software

The software listed below is pre-installed in the system. The language indicated in the parentheses is available. All the languages are not prepared for the utilities. English is used as a substitute for unavailable languages. For example, English version of DM-MS series utility setting is attached as a substitute for French version of MS-DOS.

- Microsoft Windows 98 4. 10. 2222 A (Scond Edition, all available languages)
- EPSON Touch Panel Driver 1.00 (English)
- Chips&Tech Display Driver 4.11.01.2600 (all available languages)
- Realtec Network Driver 5.367.0901.1999 (English)[Note 1]
- EPSON DM-MS series Setup Utility 1.00 (Win version, English), 1.00 (DOS version, English)[Note1]
- EPSON Logon Utility 1.02 (English)[Note 1]
- EPSON OPOS ADK 1.96 (Japanese / English)[Note 1]
- EPSON TM Driver 2.01 (Japanese / English / Chinese Traditional / Chinese Simplified)[Note 1]

[note 1]It is not setup.

Directory Configurations

The directory configurations are as follows:

```
\                               : Bootup File, Version File (Note 1)
+-- BACKUP
|    +-- LOGON                  : Software Keyboard Utility Backup
|    +-- MSRCFG                 : MSR Setup Utility Backup
|    |    +-- DOS               :  for DOS
|    |    +-- WIN               :  for Windows
|    +-- NETWORK                : Network Driver Backup
|    +-- OPOSADK                : OPOS ADK Backup
|    +-- RECOVERY               : Recovery Media Backup
|    |    +-- DATA
|    |    |    +-- RESTORE
|    |    +-- BOOTFD
|    |         +-- DATA
|    +-- TOUCH                  : Touch Panel Driver Backup
|    +-- TMDRV                  : TM / DM Driver Backup
|    +-- VIDEO                  : Video Driver Backup
+-- My Documents                : Windows 98 Document
+-- ProgramFiles                : Windows 98 Utility
+-- WINDOWS                    : Windows 98 File
```

note 1)The content of Version File (HDVER.TAG) is as follows.

```
[HD Information]
MODEL=IM-600: Model Name
OS=Windows98: OS Name
LANG=English: Language = English
                         Japanese
                         German
                         French
                         Italian
                         Spanish
                         Dutch
                         Korean
                         Chinese Traditional
                         Chinese Simplified
```

Initial Setup

When the PC main power is turned on, the environmental setting is executed as described below.

1. The IME Tutorial starts in the double byte language editions.
   Click on [ESC] key to cancel the Tutorial.

2. The program prompts you to enter the Windows owner's name. Input the name; then click on [Next]button.
   The Software License Agreement is displayed.

3. Check on [Agree] radio button and click on [Next]buton.

4. The program prompts you to enter the Product-Key. Enter the Product-Key listed on the front page of the First Step Guide packed in the COA(Certificate of Authenticity) package that comes with the OS Package. Click on [Next]button.
   Information input is completed.

5. Click on [Finished]button.

6. Set the date, time and time zone.
   The successfully standard setting may not match with your setting environment. Check the setting carefully.

7. After this update, the environmental setting is successfully completed.

⚠ *CAUTION:*

65536 colors is already set for DSTN LCD model same as TFT LCD model.

It performs setup for SR-600 when it is initially setting up. Therefore, it takes additional 20 to 30 seconds to display the Windows desktop.

Device recognition is performed for the initial setup depending on the system configuration (change in system configuration, not connectiing PS2 Mouse, etc). It may require a Driver file depending on the device. Follow the installation steps below or the manual comes with device for the installation.

From the second setup, the warning dialog "Mouse is not conncted" appears. Check on the check box and click [OK]. The dialog does not appear from the next setup.

Video Driver Installation

Follow the steps below to install the Video Driver.

1. Start C:\BACKUP\VIDEO\W98600.EXE .
   The Welcome Screen is displayed

2. Click on [Next]button.
   The Software License Agreement Screen is displayed

3. Click on [Yes]button, only if you agree on the agreement.
   Then the files are copied. The Setup Complete Screen is displayed when the copy is completed.

4. Select "Yes, I want to restart ...." , then click on [Finish]button to reboot the system.

5. It reboots the system and starts the Device Recognition. Change the settings from the [Control Panel:Display Properties:Settings Tab] if necessary.

Network Driver Installation

Follow the steps below to install the Network Driver.

1. If the Network Device is found during the Windows Bootup, Wizard Screen is displayed. Click on [Next] button.

2. Select [Display a list of all the device ....], then click on [Next]button.

3. Select Network adapters and click on [Next]button.
   The Select Device Screen is displayed.

4. Click on [Have Disk]button.

5. Install From Disk screen is displayed. Type C:\BACKUP\NETWORK and click on [OK] button.

6. Device Model Name is displayed. Click on [OK]button.
   It goes back to the Wizard screen.

7. Click on [Next]button.

8. It asks you to insert the Disk. Click on [OK]button.
   Copying Files screen is displayed.

9. Type C:\BACKUP\NETWORK and click on [OK]button.
   It starts the driver installation.

10. Click on [Finish]button.

11. It asks you to reboot the system. Click on [Yes]button and reboot the computer.
    After rebooting the system, Network Password Screen is displayed.

12. Enter an appropriate User Name and Password and click on [OK]button.

13. Password Check Screen is displayed. Enter the Password again and click on [OK]button.

Windows NT 4.0

Accompanying Software

The software listed below are pre-installed in Windows NT Workstation 4.0 pre-installed HDD.

- Microsoft Windows NT Workstation 4.0(all available languages)
- Microsoft Windows NT Service Pack 4(all available languages) [Note 1]
- Microsoft Windows NT Service Pack 5(all available languages)[Note 1]
- Microsoft Windows NT Service Pack 6(all available languages)[Note 1]
- Microsoft Internet Explorer 4.01 Service Pack2(all available languages)
- Microsoft Data Access Components 2.0 Service Pack1(all available languages)
- Microsoft Windows NT 4.0 Service Pack4 Y2K Update(all available languages)[Note 2] y2kupd.exe netfixi.exe
- Microsoft Windows NT 4.0 Service Pack5 Y2K Update(all available languages)[Note 2] netfixi.exe
- EPSON Touch Panel Driver Ver. 1.01 (English)
- Chips And Technologies Video Driver Ver.1.29(all available languages)
- Realtek Network Driver Ver.4.364.0719.1999(English) [Note 3]
- EPSON DM-MS series Setup Utility Ver 1.0.2(English)[Note 2]
- EPSON Printer Driver for Windows
- EPSON Logon Utility Ver.1.01 (English)[Note 2]
- EPSON Screen Saver Ver.1.01 (English) [Note 2]

[note 1] :Select SP4 and SP5 installation during the setup. (Installation tool is required)
:If your language is not available in the foreign version, install the English version as a default.

[note 2] :It is not setup.
:OPOS-ADK Japanese version is applied to Japanese version Master. OPOS-ADK English version is applied to foreign version Master.
:It automatically detects Japanese and foreign versions. (English is applied to foreign version)

[note 3] :Select the installation during the Windows setup.

Directrory Configurations

The HDD root directory configurations are as follows (sub directory is omitted):

```
+-- I386                :Windows NT System(copy of  Windows NT CD-ROM)
+-- Drvlib              :Drivers(copy of Windows NT CD-ROM)
+-- Drvlibj             :JP version Drivers(copy of  Windows NT CD-ROM)
+-- Program Files       :Windows NT Application
+-- SP4                 :Service Pack 4
|    +--Y2k             :Y2K Update (Y2kupd.exe, netfixi.exe)
+-- SP5                 :Service Pack 5
|    +--Y2k             :Y2K Update (Netfixi.exe)
+-- SP6                 :Service Pack 6
+-- Ie4                 :Internet Explorer 4.01 SP2
+-- Mdac                :MDAC2.0 SP1
+-- Backup              :
|    +--Msrcfg          :Key Definition Utility backup
|    |    +-- Win       :
|    |    |    +-- Disk1  :
|    |    +-- DOS       :
|    +--Touch           :Touch Panel Driver Backup (EPSON)
|    +--Video           :Video Driver Backup
|    +--Network         :Network Driver Backup
|    +--Logon           :Logon Utility Backup
|    +--SSFORNT         :Screen Saver Backup
|    +--Recovery        :
|    |    +-- Data      :HD Backup (for Recovery Media)
|    |    |    +-- Restore  :Easy Restore
|    |    +-- Bootfd    : Boot FD
|    |    +--Data       : Boot FD Data
+-- Temp                :
+-- WINNT               :Windows NT Workstation 4.0 System
```

(1) [I386], [Drvlib], and [Drvlib](available only in Japanese version) directory may be deleted after the Windows NT application is added and the Driver is added or changed.

(2) The directories under the [Backup] directory are the backup of each driver and utility, which can be backed up by copying them to the FD or the like. These directories may be deleted after the backup is completed

(3) For the Japanese version, refer to the each version of directory configurations for the details of folder under C:\backup\oposoadk. For foreign version, each module exists under oposadk directory. (The directories for each versions does not exist.)

(4) SP4, SP5, and SP6 directories are used to install the Service Pack 4, Service Pack 5, and Service Pack 6, respectively. These directories may be deleted if the installation of these service packs is not necessary.

(5) The [Y2K] directory under the SPx directory is used to apply Y2K compliance to each Service Pack.

(6)The [Ie4] directory is used to install or uninstall Internet Explorer 4.01. This directory may be deleted if the installation or uninstalled of Internet Explorer 4.01 is not necessary.

(7) The [Mdac] directory is used to install Data Access Components 2.0. This directory may be deleted if the installation of Data Access Components 2.0 is not necessary. The MDAC2.0 cannot be uninstalled.

Initial Setup

Follow the steps below to set up the system.

1. Turn on the power, and boot the system from the pre-installation HDD.
   Windows NT Setup (GUI Mode Setup) starts.

2. Select the necessary options and install. Follow the instructions of the GUI Mode Setup.

3. Select LCD Panel Type.

4. Select Service Pack Install.
   Reboot the system if Service Pack 4 or the advanced version is installed.

5. Select Windows NT from the Boot Loader Menu, and start Windows NT.

6. Log on to the system using the Administrator.
   The installation of the IE4.01 and MDAC2.0 starts.(Entry is not required during the installation of the IE4.01 and MDAC2.0.)

The system will automatically reboot after the installation is completed. The log-on operation will be normal from the next startup of Windows NT.

⚠ *CAUTION:*

VGA Mode setup is executed.

The keyboard must be connected before starting the setup as the touch panel cannot be used until all the settings are completed and the system is rebooted. Even when the touch panel cannot be used, the keyboard must be used to log on to Windows NT for startup of the log-on process by using the CTRL+ALT+DEL keys and for the user authentication.

If log-on utility is installed, Keyboard connection can be logged on with log-on utility and is not necessary.

Service Pack Installation

Start up the following dialogue box for selecting the service pack to be installed in the setup process of Windows NT.

- The style of the dialogue box should be such that no system menu is included and the size of the window is fixed.
- Attempting to exit out of the dialogue box by pressing the **ALT**+**F4** keys will be ignored.
- In the startup process of this dialog box, the Service Pack is not selected.

Select the service pack and press the [Install] button, and the installation of Service Pack starts.

If the [Install] button is pressed without selecting Service Pack, the following message will appear.

⚠ *CAUTION:*

Re-installation is possible after OS setup for each Service Packs.

Y2K Update Module is not installed for each Service Packs.
(If it's necessary, install it after OS setup.

Video Driver Installation

Follow the steps below to install the Video Driver.

1. Open the control panel and select “Screen”.
2. Set the Driver Disk into FDD.
3. Select “Display Category” from the “Display Setting”.
4. Click on “Change” button and click on “Disk in Use(Have Disk)”.
5. Select Chips Video Accelerator (65545 / 48 / 50 / 54 / 55 68554 69000) , then type “OK". Starts the installation.
6. After the installation, reboot the system.

Network Driver Installation

Follow the steps below to install the Network Driver.

1. Open the control panel and select “Network".
2. Set the Driver Disk into FDD.
3. Select “Add” from the “Adapter”.
4. Click on “Disk in Use(Have Disk)”.
5. RTL8139(A / B / C / 8130)PCI Fast Ethernet Adapter, then type “OK".
6. Select (1) AUTO for Duplex Mode.
7. After the installation, reboot the system.

OS Master Recovery

Creation of the Recovery Media

CD-ROM for recovery is not included with the system. It is recommended to back up the recovery following the steps below.

❑ Creation of the startup disk.

1. Start the MS-DOS prompt.
2. Move to C:\backup\recovery\bootfd director.
3. Execute the Makefd.bat file.
4. Insert a floppy disk into the FDD.
5. Press **Enter** key. (Formatting will start.)

6. When asked whether another floppy disk should be formatted or not, press the **N** key.

7. When the message that the formatting is over appears, quit the MS-DOS prompt.

❑ Saving the HD image data.

Save all the data in the C:\backup\recovery\data directory in other media or drive.

(Example)

1. Make a network connection to a PC that can write the SR-600 data onto a CD-R.
2. Save all data under the C:\backup\recovery\data directory of the SR-600 to the PC.
3. Write all the data saved in the step 2 above into a CD-R.
4. The data under the C:\backup\recovery directory may be deleted after the data is saved.

❑ Saving the POS and UniMini data.

As the OPOS and UniMini data are not saved in the image data saved in "Saving the HD image data".
Save all data contained in the C:\backup\oposadk and C:\backup\Tmdrv directories in other media or drive.

Note:
The directories under the [c:\backup] directory are the backup of each driver, which can be backed up by saving them individually.

Recovery Method

❑ Edit of the startup disk.

Edit the [CONFIG.SYS] and [AUTOEXEC.BAT] files created in previous section “Creation of the recovery media” according to the device in which the image data was saved.

❑ Recovery

1. Connect the media or drive in which the data was saved in the previous section “Creation of the recovery media” to the SR-600.

2. Use the startup FD created in the previous section “Creation of the startup disk” to reboot the system.

3. Type "x: **ente**r". ("x" is the drive which contains the image file).

4. Execute the [Start.bat] file.
   When the title of EasyRestore appears and then the startup screen appears with the EPSON logo.

5. Select [continue].
   Execute the setup of the OS after the OS is recovered.

6. Resume [OPUS] and [UniMini] saved in “Creation of the recovery media” to the [C:\Backup] directory.

⚠ *CAUTION:*

Saving the image data requires 500 to 600MB. 3GB capacity is required for Windows 2000. Therefore, select the CD-ROM, MO, Server or other media having a large capacity for saving.

HD image data file (HDIMG002.PQI) cannot be partitioned due to the EasyRestore limitation.

EasyRestore runs only on MS-DOS. Therefore, the saving device as described in “Saving the HD image data” should be recognized by MS-DOS.

If the system is booted from the internal hard disk of the SR-600, it cannot be recovered.

Windows2000

Accompanying Software

The following is pre-installed in Windows 2000 Professional pre-installed HDD for IM-600.

- Microsoft Windows 2000 Professional
- Microsoft Windows 2000 Professional Multilanguage Version [Note 2]
- EPSON Touch Panel Driver Ver.1.00.0 (English)
- EPSON DM-MS series Setup Uility Ver 1.0.2 (English) [Note 1]

[note 1) It is not setup.

[note 2) Japanese version is not available.

Directrory Configurations

The HDD route directory configurations are as follows (sub directory is omitted):

```
+-- I386                    : Windows 2000 System(copy of Windows 2000CD-ROM)
+-- BOOTDISK                : Windows 2000 SETUP Start Disk
+-- MUI                     : Windows 2000 Multilanguage
                              (copy of Windows Multilanguage Version CD-ROM)
|    +--NL.MUI              : Netherlandic
|    +--FR.MUI              : French
|    +--GER.MUI             : German
|    +--IT.MUI              : Italian
|    +--ES.MUI              : Espana
|    +--KOR.MUI             : Korean
|    +--CHT.MUI             : Chinese(Traditional)
|    +--CHS.MUI             : Chinese(Simplified)
+-- Backup                  :
|    +--Msrcfg              : DM-MS series Setup Utility Backup
|    |    +-- Win           :
|    |    |    +-- Disk1    :
|    |    +-- DOS           :
|    +--Touch               : Touch Panel Driver backup ( )EPSON )
|    +--Recovery            :
|    |    +-- Data          : HD Backup (for Recovery Media)
|    |    |    +-- Restore  : Easy Restore
|    |    +-- Bootfd        : Boot FD
|    |    |    +-- Data     : Boot FD Data
+-- Documents and Settings          : Windows 2000 User Setting
+-- Program Files         : Windows 2000 Application
+-- WINNT                 :( Windows 2000 Professional System)
```

(1) The directories under the [Backup] directory are the backup of each driver and utility, which can be backed up by copying them to the FD or the like. These directories may be deleted after the backup is completed.

(2) MUI Directory is not available for Japanese version.

(3) KOR.MUI, CHT.MUI, and CHS.MUI is not available for Western version.

(4)NL.MUI, FR.MUI, GER.MUI, IT.MUI,and ES.MUI are for Asia version.

(5) You may delete the languages from the MUI directory if it is not necessary.

OS Master Recovery

Follow the same steps as WindowsNT 4.0 for Creation of recovery media and recovery method. Refer to the "OS Master Recovery" (see section 2-17).

Chapter 3
BIOS Setup

The system ROM of the SR-600 incorporates the following utilities related to the BIOS. These utilities are explained in this chapter.

- ❑ BIOS Setup Utility (Refer to page 3-1)
- ❑ Power On Self Test (POST) (Refer to page 3-11)
- ❑ Device Diagnostic Utility (Refer to page 3-15)

BIOS Setup Utility

BIOS set up utility is used to configure the system operating environment. When you use the SR-600 for the first time, be sure to execute this program and set the operating environment. Use this program also when you want to change the operation environment.

Setup and Exit

How to Set up

Follow the steps below to run the BIOS setup utility:

1. Connect the keyboard to the keyboard / mouse connector.
2. Turn on the power supply of the SR-600 to setup.
3. Press the "DEL" key during the Power On Self Test during the POST process. BIOS setup starts.

How to exit

Follow the steps below to enable the new configuration and exit the BIOS Setup utility:

1. Display the main menu of BIOS setup utility .
2. Select “SAVE & EXIT SETUP” and press Enter key.
3. The message “Save and EXIT (Y / N)?” appears. Press the Y key and then Enter key. The BIOS Setup utility finishes and the system reboots with the new configuration enabled.

Follow the steps below to cancel the new configuration and exit the BIOS Setup utility.

1. Display the main menu of BIOS Setup utility.
2. Select “EXIT WITHOUT SAVING” and press Enter key.
3. The message “Quit Without Saving (Y / N)?” appears. Press the Y key and then Enter key. The BIOS Setup utility finishes and the system reboots with the new configuration cancelled. Time &Date setting is also updated.

Confidential

⚠ *CAUTION*:

Do not change any BIOS settings unless it is necessary. Also do not change the settings specified as "Do not change" in this manual. If you change them, the SR-600 may not operate normally.

Basic Operation

Help

Press the F1 key to display the options of the items displayed inversely and the default setting value. Press F1 again or the Esc key to exit the help window.

Changing settings

To select an item, move the cursor (using an arrow key) to the desired field. Then select the value of the selected field with +(Page Up) or - (Page Down) key. Run the Save & EXIT SETUP command from the main menu. All the current indicated values are saved.

Main Menu

The following items can be selected from the BIOS setup main menu :

Table 3-1 BIOS Main Menu

Item	Contents
STANDARD CMOS SETUP	Standard BIOS setup menu (See table 3-2)
BIOS FEATURES SETUP	Expansion BIOS setup menu (See table 3-3)
CHIPSET FEATURES SETUP	It sets the items that rely on the chipset on the motherboard. As the optimum parameters are normally set by executing [LOAD SYSTEM DEFAULT], these settings should not need to be modified. (See table 3-4)
POWER MANAGEMENT SETUP	It sets the items related to power management. (See table 3-5)
PNP/PCI CONFIGURATION	Performs the IRQ number, the DMA assign method and other resource configurations. Do not change the default settings [Auto]under normal conditions. (See table 3-6)
LOAD BIOS DEFAULTS	Loads the minimum default values required for boot-up purposes that are recorded beforehand in the BIOS ROM. This function has been provided for troubleshooting purposes. The execution of this function has no effect on the [STANDARD CMOS SETUP] parameters.
LOAD SETUP DEFAULTS	Loads the optimum default values for the SR-600. Setup default assures the perfect performance of SR-600. If the contents of the CMOS are erased owing to long-term storage without the system being used, this function must be used to restore the default settings. If the CMOS settings are erased, a message will be displayed during the boot-up. The execution of this function has no effect on the [STANDARD CMOS SETUP] parameters.
INTEGRATED PERIPHERALS	It sets the items related to I/O sub system, such as the controller for ptional devices. (See table 3-7)
SUPERVISOR PASSWORD	Enables a password to be set, changed, or canceled for system and BIOS setup utility security purposes. Without Supervisor Password, BIOS setup utility cannot be activated. (See "PASSWORD")

Table 3-1 BIOS Main Menu

Item	Contents
USER PASSWORD	Enables a user password to be set for use of the system. This can be used to differentiate between authority levels when multiple users are logged onto the system. (Refer to "PASSWORD")
IDE HDD AUTO DETECTION	This function automatically detects the IDE Hard Disk Parameter.
SAVE & EXIT SETUP	Saves all modified values in the CMOS RAM, and exits the BIOS setup utility.
EXIT WITHOUT SAVING	Cancels all modified values, and exits the BIOS setup utility.

STANDARD CMOS SETUP

System clock, Calendar settings, disk drive parameter, video sub system type settings and error types that terminate Power On Self Test (POST) can be selected from the standard CMOS setup.

Table 3-2 STANDARD CMOS SETUP Menu

Item	Cotents
Date/Time	It sets the date. (BIOS automatically determines the day of the week; this field is for information only.) Press ← or → to move to the desired field (date, month, year). **PgUp** or **PgDn** increment the setting, or type the desired value into the field. Set the time for a 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press ← or → to move to the desired field. Press **"PgUp"** and **"PgDn" key to** increment the value, or type the desired value into the field.
Drive A	It sets the FDD type to be connected. [None] is set when no FDD type is connected or cannot be detected. IRQ6 will not be available even when [None] is set for this parameter. It is also necessary to note that the FD will not be detected normally if different capacities have been set.
Drive C/ Drive D	BIOS can automatically detect specifications and optimal operating mode of almost all IDE hard drives. If you select type AUTO, BIOS detects HDD specifications during POST. Set this item at AUTO
LCD & CRT	It sets the output destination for the video. Normally set at [Auto]. Auto: The CRT connection is automatically detected during boot-up. Data is output to both CRT and LCD when a CRT is detected. Data is output to only LCD when no CRT is detected. Both: Data is output to Both CRT and LCD. LCD: Data is output to only LCD. CRT: Data is output to only CRT. Data is output to both CRT and LCD regardless of the settings when executing POST and the BIOS setup utility.
Halt On	You can set the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections: No Errors — POST does not stop for any errors. All Errors — If BIOS detects any non-fatal error, it stops. All, But Keyboard — POST does not stop for a keyboard error, but does for all other errors. All, But Diskette — POST does not stop for diskette drive errors, but stops for all other errors. All, But Disk/Key — POST does not stop for a keyboard or disk error, but stops for all other errors.

BIOS FEATURES SETUP

It sets the basic BIOS settings, such as cache, boot-up sequence and memory shadowing.

Table 3-3 BIOS FEATURES SETUP Menu

Items	Description
Virus Warning	Disables and enables writing onto the HDD boot sector and partition table.Normally set at [Disabled]. The system will be protected from viruses when this setting is set at [Enabled], but on the other hand, it is necessary to note that it will not be possible to execute FDISK and FORMAT when this setting to set at [Enabled].
CPU Internal L1 Cache	Enables and disables the CPU internal L1 cache. Normally set at [Enabled]. It is necessary to note that performance will drop when this parameter is set at [Disabled] (no caching.)
CPU Internal L2 Cache	Enables and disables the CPU internal L2 cache. Normally set at [Enabled]. It is necessary to note that performance will drop when this parameter is set at [Disabled] (no caching.)
CPU L2 Cache ECC Checking	Enables and disables the CPU internal second cache (L2 cache) ECC checking. Normally set at [Enabled].
Quick Power On Self Test	It sets the items related to memory testing with POST (Power On Self Test) executed during boot-up. Enabled: Executes a single memory test during boot-up Disabled: Executes three memory tests during boot-up The memory test will be executed with three different patterns when this parameter is set at [Disabled]. It is also possible to skip the memory tests by pressing the [ESC] key during testing.
Boot Sequence	Do not change this setting.
Boot Up Floppy Seek	It sets whether to search or not search for the FDD during boot-up. Normally set at Disabled. Boot-up time can be slightly reduced by setting this at [Disabled] when the boot-up is not performed on the FDD boot such as HDD Boot.
Boot Up Num Lock Status	It sets whether to enable or disable the keyboard's NumLock function during boot-up.
Gate A20 Option	The settings related to memory access that exceeds 1Mbyte. Normally set at [Fast]. Fast: Gate A20 is used by the chipset, and fast memory access (which is actually a switch between the real mode and the protect mode) is enabled. Normal: Only enables access for conventional AT compatible systems that use a keyboard controller.
Typematic Rate Setting	It sets whether to enable or disable the [Typematic Delay (Msec)] and [Typematic rate (Chars/Sec) settings.
Typematic Rate	It sets how many times per second a key is to be activated (repeated) when pressed continuously.
Typematic Delay	It sets the repeating interval between the 1st and 2nd pressing in units of msecs. For example, if this parameter is set at 250ms, the key will be repeated at intervals of 250ms when pressed continuously.
Security Option	It sets the timing for requesting password input. The following differences exist in accordance with the setting. System Password input is requested with the [USER PASSWORD] setting during boot-up. Setup Password input is requested whenever the BIOS setup utility is started up.
VGA/SVGA Stratching	It sets if display VGA (640 x 480)in SVGA.

Table 3-3 BIOS FEATURES SETUP Menu

Items	Description
HDD S.M.A.R.T Capability	It sets the HDD S.M.A.R.T function Enabled or Disabled. Normally set at Enabled. If it set at Enabled, and the HDD does not support this function, Message is displayed on System Configuration Screen.
Video BIOS Shadow	It enables or disables the copying (Shadowing) of the video BIOS code from C0000h to CFFFFh to the main memory. The purpose of shadowing is to provide high-speed execution to improve performance by execuing the video BIOS code from the main memory. Shadowing will always be performed with Win95/98/2000 regardless of the setting.
C8000-CBFFF, CC000-CFFFF, D0000-D3FFF, D4000-D7FFF, D8000-DBFFF, DC000-DBFFF Shadow	It enables or disables the copying (Shadowing) of the ROM BIOS Code on thePC Card to the MainMemory. The purpose of shadowing is to provide high-speed execution to improve performance by execuing the ROM BIOS Code on the PC Card from the Main Memory.

CHIPSET FEATURES SETUP

It sets the items that rely on the chipset situated on the motherboard, such as the memory, the bus timing and the system temperature. As the optimum parameters are normally set by executing [LOAD SYSTEM DEFAULT], these settings need not be changed.

Table 3-4 CHIPSET FEATURES SETUP Menu

Items	Description
SDRAM RAS to CAS Delay	It sets the Delay time after the SDRAM RAS to move to CAS. It increases Memory Access as it reduces time interval.
SDRAM RAS Precharge Time	This is a SDRAM version of DRAM RAS Precharge Time. It sets the CPU clock assigned for RAS signal to store the required electric charge before the SDRAM reflesh. It increases accessibility as it reduces value, but it may cause problems in Reflesh and loose contents of the memory if the value is set too low.
SDRAM CAS Latency	It sets the value of CAS Waiting Time Clock . It increases accessibility as it reduces this value.
DRAM Data Integrity Mode	It increases reliability of Data.
System BIOS Shadow	It sets whether to copy (shadowing) or not copy the system BIOS code between F0000h and FFFFFh into the main memory. Normally set at [Disabled]. Enabled: Shadowing Disabled: Non Shadowing Performance will be improved with operating systems that perform the BIOS call, such as DOS, Win 95, 98 and 2000, by setting this parameter to [Enabled]. On the other hand, it must be set at [Disabled] for WinNT, which does not perform the BIOS call.
Video BIOS Cacheable	It sets whether to cache (L2 cache) the shadowed video BIOS code. Performance will be improved by setting this parameter to [Enabled].
Video RAM Cacheable	It sets whether to cache (L2 cache) the shadowed video RAM (VRAM). Performance will be improved by setting this parameter to [Enabled].
8Bit I/O Recovery Time	It sets the 8-bit ISA timing. It is necessary to align the pace of CPU operations for bus I/O request completion in order to ensure the speed is faster than the I/O bus. This stand-by time is known as 'recovery time.' This is usually one bus clock, but it is possible to increase this figure to stabilize the system if the ISA bus device operations are unstable.
16Bit I/O Recovery Time	It sets the 16-bit ISA timing. This is usually one bus clock, but it is possible to increase this figure to stabilize the system if the ISA bus device operations are unstable.
PassiveRelease	The settings related to the chipset's PCI-ISA bridge. As the response from the ISA bus device is not good for CPU requests, the CPU will not be able to execute other processes while waiting for the ISA bus response, and performance will consequently be lowered. In order to solve this problem, an ISA/EISA cycle and a CPU-to-PCI cycle are triggered simultaneously in a function added from PCI specification revision 2.1. This is normally set at [Enabled].
Delayed Transaction	This function is only valid for chipsets mounted with a 32-bit post write buffer, a function added from PCI specification revision 2.1. This function releases (passively) the PCI bus during ISA bus access that consumes approximately 50 to 60 PCI clocks. In other words, bus master access is possible from the PCI device during ISA bus access, and this increases performance. Normally set at [Disabled].
CPU Temp High Limit	It sets the High Limit of Thermal Throttling by hardware. If the setting temperature is above the High Limit, It automatically changes the CPU to Low Power Mode and decreases CPU temperature. If the temperature is set too low or the temperature difference to Low Limit is too little, CPU speed changes frequently and the performance may decrease. Also, it is necessary to set the higher temperature than the Low Limit.

Table 3-4 CHIPSET FEATURES SETUP Menu

Items	Description
CPU Temp	It sets the Low Limit of Thermal Throttling by hardware. If the setting temperature is below the Low Limit, it automatically changes CPU to Full On from Low Power Mode. If the temperature difference with Hot Limit is too little, CPU speed changes frequently and the performance may decrease. Also, it is necessary to set the lower temperature than the High Limit.
Thermal Monitor	Displays CPU Junction Temperature in Celsius or Fahrenheit.
Fan Speed Monitor	Displays revolutions of CPU fan and Power Supply Fan in RPM.
Voltage Monitor	Displays the Voltage of VTT(1.5V series), VCORE(2.0V series), 3.3V, 5V and12V.

POWER MANAGEMENT SETUP

It sets the items related to power management. Power management prolongs the battery life for LCD backlight, HDD and other parts.

Table 3-5 POWER MANAGEMENT SETUP Menu

Items	Description
PM Control by APM	It enables or disables to control the power management with the APM (Advanced Power Management) BIOS from the OS or the application. Normally set at [Yes]. If the APM driver is included in the operating system, power management control and the automatic power off functions can be enabled. If the APM driver is not included in the operating system, neither the power management control nor the automatic power off functions can be enabled even if [Yes] is set. If [No] is set, the power management control with APM BIOS Function CAll does not function at all.
Throttle Duty Cycle	It sets a CPU Clock Duty during CPU Low Power Mode, Video Off Mode, and CPU Control Mode by Thermal. CPU speed is slower as setting value gets bigger.
Video Off Method	It sets the method for turning the video off with power management. Normally set at [V/H SYNC+Blank]. V/H SYNC+Blank: Stops the vertical/horizontal sync signals and video signals from the video controller. It is common for the display of monitors that support power management to also be switched off when the vertical/horizontal sync signal is stopped. DPMS: Controls the BIOS in accordance with the video controller's DPMS function (Display Power Management System.) It is necessary for DPMS to be supported by the monitor. Blank Only: Set when using monitors that only have a display off function and do not support power management.
HDD Power Down Timer	It sets the power down (stop the motor) timer for the HDD. The HDD enters the power down mode when the system idles continuously for a pre-determined period of time.The timer is reset if an access to the HDD head occurs within the set time. The default setting is 15 minutes, and can be changed by in 1 minute increments. Also, it does not change to the HDD power down mode from the Disabled setting.
Video Off Timer	It is same as Stand-by mode of general PC. CPU is in Low Power operation or Video Sub System Power Down during this mode. Therefore, systems other than CPU and Video Sub System is in Full On Mode. If the system is kept idle continuously, it sets or moves the Video Sub System to Off mode after several minutes.
Suspend Timer	It sets the timer for shifting to the suspend mode. The system enters the suspend mode after idling continuously for a pre-determined period of time. Suspend mode is not supported with Windows NT. Normally set at [Disabled].
Front Switch Function	It sets the function of the main power switch (front switch) during the power on status. When the front power switch is pressed during the power off status, it always turns on the SR-600. Power Off : Forced power off APM Power Off : Tells the APM BIOS that an event occurs.Usually the application uses this notice for some operation. The default setting is APM Power OFF.

Table 3-5 POWER MANAGEMENT SETUP Menu

Items	Description
Wake On LAN	It enables or disables the Power On via the network (LAN). The default setting is "Disabled." When this parameter is set at [Enabled] the power will be switched on automatically in the same way as when the power on operation is performed with the front switch when a special packet, known as the 'Wakeup Packet,' is received from the host.
CPU Low Power Timer	CPU is operating in Low Power(Speed) during this mode. Therefore, systems other than CPU is in a Full On Mode. If the system is kept idle continuously, it sets or moves the System to CPU Low Power Mode after several minutes.
BIOS Timer Reload Events	It sets the event to reset the [HDD PowerDownTimer] and the [Suspend Timer]. The reload events contains the following: IDE Primary Master: Occurrence of access to the IDE primary master IDE Primary Slave: Occurrence of access to the IDE primary slave Serial Port 1 and 2: Occurrence of access to the serial port (COM1/2) Serial Port 3 and 4: Occurrence of access to the serial port (COM3/4) Floppy Disk: Occurrence of access to the FDD Parallel Port: Occurrence of access to the parallel port Default settings: IDE Primary Master: Enabled IDE Primary Slave: Disabled Serial Port 1 and 2: Enabled Serial Port 3 and 4: Enabled Floppy Disk: Disabled Parallel Port: Disabled

PNP/PCI CONFIGURATION

Performs the IRQ, the DMA assign method and other resource configurations. Normally, the default settings do not need to be changed.

Table 3-6 PNP/PCI CONFIGURATION Menu

Items	Description
PNP OS Installed	It sets whether the installed OS supports PnP (Plug & Play). Normally set at [Yes].
Resources Controlled By	It sets whether PnP (Plug 6 Play) is to be performed for IRQ, DMA, I/O address and other system resource assignations. Normally set at [Auto]. The minimal system resources are assigned and BIOS is automatically performed when this parameter is set at [Auto], and this status is notified to the OS to enable it to succeed to this mode. However, there are cases when automatic setting with the PnP BIOS prevents the IRQ parameters and common parameters from being set at the required values. In this event, change the setting to [Manual] and then make the required settings manually with [IRQ#/DMA# assigned to] or the OS. Also, it is necessary to use [IRQ#/DMA# assigned to] in order to make manual settings when legacy devices that do not support Plug & Play are in use.
Reset Configuration Data	It sets whether to reset the PnP-related information logged in the ESCD block (Extended System Configuration Data) on subsequent boot-ups. Normally set at [Disabled].This parameter will be automatically restored to the [Disabled] setting on the next boot-up when set at [Enabled].

Table 3-6 PNP/PCI CONFIGURATION Menu

Items	Description
IRQ#/DMA# Assigned To	Enables the IRQ and DMA assignations to be set manually when [Resource Controller By] is set at [Manual]. The [Auto] setting is used when the required assignations cannot be selected owing to legacy devices that do not support Plug & Play being in use. It is necessary to ensure that no resource conflicts arise when setting this parameter. This is especially applicable when all IRQ resources are required for serial ports and other ISA devices. On the other hand, the IRQ resources are controlled by the PCI steering holder with PCI devices.
Used MEM Base Addr	It sets the base address of the UMB in the expanded area (768K to 896K). Normally set at N/A. If the values are specified, the values mean the base address.
Used MEM Length	It sets the memory size when [Used MEM Base Addr] is set to other than N/A. Normally 8K bytes. If the value is changed, the value is the memory size.

INTEGRATED PERIPHERALS

It sets the items related to the I/O ports, such as the IDE controller, the transfer mode, the serial ports and the parallel port.

Table 3-7 INTEGRATED PERIPHERALS Menu

Items	Description
IDE HDD Block Mode	It sets the sector numbers related to the block transfer mode (The block transfer mode reduces the number of interruptions by the multi sector transfer to enable higher transfer speed). Normally set at [Enabled].
On-chip PCI IDE	It sets whether to use or not use the IDE controller on the motherboard (chipset). Two 2.5 inch HDDs can be connected to the primary PCI. It is also possible to connect both a CD-ROM and a compact-flash to the secondary PCI IDE. It is possible to make available the IRQ with system configurations that do not use IDE devices (drives) by disabling both the primary and secondary parameters.
IDE Primary Master PIO	It sets the transfer mode with the PIO of the IDE device connected to the IDE interface (Master). This parameter is normally set at [Auto] and automatically sets up the optimum mode with the auto detection function on the BIOS during POST.
IDE Primary Slave PIO	It sets the transfer mode with the PIO of the IDE device connected to the IDE interface (Slave). This parameter is normally set at [Auto] and automatically sets up the optimum mode with the auto detection function on the BIOS during POST.
IDE Primary Master UDMA	It sets the transfer mode with the DMA of the IDE device connected to the IDE interface (Master). This parameter is normally set at [Auto] and automatically sets up the optimum mode with the auto detection function on the BIOS during POST.
IDE Primary Slave UDMA	It sets the transfer mode with the DMA of the IDE device connected to the IDE interface (Slave). This parameter is normally set at [Auto] and automatically sets up the optimum mode with the auto detection function on the BIOS during POST.
USB Keyboard Support	It enables or disables a USB Keyboard Legacy Support setting. If Legacy Support Enables is selected, it is necessary to set the [Assign IRQ For USB] stting to Enable.
Onboard LAN Support	It sets enable or disable an Onboard Ethernet usage.
Onboard Parallel Port	It sets the I/O address and IRQ number of the parallel port (LPT1) on the motherboard. This parameter can be selected from 3BC/IR7, 378/IRQ7 (Default), 278/IRQ5, and [Disabled]. The I/O address and IRQ number will be available if this parameter is set at [Disabled].
Parallel Port Mode	It sets the parallel port mode. This parameter can be selected from SPP, EPP1.9+SPP, ECP, ECP+EPP1.9, Normal, EPP1.7+SPP and ECP+EPP1.7. It is necessary to set [DMA Channel] in [ECP Mode Use DMA] when the [ECP Mode] has been selected.

Table 3-7 INTEGRATED PERIPHERALS Menu

Items	Description
ECP Mode Use DMA	It sets the DMA channel when either ECP, ECP+EPP1.9 or EXP+EPP1.7 have been set with [Parallel Port Mode].
Onboard Serial Port 1	It sets I/O adress and IRQ of Serial ports 1 (COM1) on the mother board. I/O address and IRQ number are a set and can be selected from Available Option. The serial port setting cannot be used if it sets at Disabled.
Serial Port 1 Outlet 5V	It enables or disables the 5V power supply to a serial ports 1. Set it at Enbled and proceed power supply to use the serial port device, which requires power supply for barcode scanner etc. Also, make sure that the power is supplied if this setting is Enabled, although [Onboard Serial Port 1] is set at Disabled.
Onboard Serial Port 2	It sets I/O address and IRQ of serial ports 2 (COM2) on the mother board. I/O address and IRQ number are a set and can be selected from Available Option. The serial port setting cannot be used if it sets at Disabled.
Serial Port 2 Outlet 5V	It enables or disables the 5V power supply to serial ports 2. Set it at Enable to use the serial port device which requires power supply for barcode scanner etc. Also, make sure that the power is supplied if this setting is Enabled, although [Onboard Serial Ports 2] is set at Disabled.
Onboard Serial Port 3	It sets I/O address and IRQ of serial ports 3 (COM 3) on the mother board. I/O address and IRQ number are a set and can be selected from Available Option. The serial port setting cannot be used if it sets at Disabled.
Serial Port 3 Mode	It sets the serial ports 3 operational mode. Mode 0: General Purpose (External Use) Mode Mode 1: TM/DM-D (Internal/External Use) Mode Mode 2: General Purpose (Internal Use) Mode
Onboard Serial Port 4	It sets I/O address and IRQ of serial ports 4 (COM4) on the mother board. This port is dedicated to a Touch Panel. I/O address and IRQ number are a set and can be selected from Available Option. The serial port setting cannot be used if it sets at Disabled

PASSWORD

When you select this function (SUPERVISOR PASSWORD or USER PASSWORD) from the main menu, a message explained below appears at the center of the screen: then enter the password. Password distinguishes upper and lowercase characters and can have up to 8 characters.

```
ENTER PASSWORD:
```

Typing a password clears any previously entered password.
The following message appears next.

```
CONFIRM PASSWORD:
```

Again, type the password and press **Ente**r.

To clear the password, simply press **Enter** when asked to enter a password. Then the password function is disabled.

To abort the process at any time, press **Es**c.

Power On Self Test (POST)

Power On Self Test (POST) checks the system configuration and hardware while power is on. If it detects any errors, it issues error messages and emits audible beeps. The following section explains the error messages.

POST Messages

During the POST, the BIOS either sounds a beep code or displays a message when it detects a correctable error. The following is a list of POST messages. An error message may be followed by a prompt to press **F1** to continue or press **DEL** to enter Setup.

Table 3-8 POST Messages

Message	Description
Beep	The only beep code indicates a video error has occurred and BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.
CMOS BATTERY HAS FAILED	CMOS battery is no longer functional. It should be replaced.
CMOS CHECKSUM ERROR	Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

Table 3-8 POST Messages (Continued)

Message	Description
DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER	No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.
DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP	Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.
DISPLAY SWITCH IS SET INCORRECTLY	Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.
DISPLAY TYPE HAS CHANGED SINCE LAST BOOT	Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.
EISA Configuration Checksum Error PLEASE RUN EISA CONFIGURATION UTILITY	The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.
EISA Configuration Is Not Complete PLEASE RUN EISA CONFIGURATION UTILITY	The slot configuration information stored in the EISA non-volatile memory is incomplete. Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
ERROR ENCOUNTERED INITIALIZING HARD DRIVE	Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.
ERROR INITIALIZING HARD DISK CONTROLLER	Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.
FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT	Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.
Invalid EISA Configuration PLEASE RUN EISA CONFIGURATION UTILITY	The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory. NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
KEYBOARD ERROR OR NO KEYBOARD PRESENT	Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot. If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Table 3-8 POST Messages (Continued)

Message	Description
Memory Address Error at ...	Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.
Memory parity Error at ...	Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.
MEMORY SIZE HAS CHANGED SINCE LAST BOOT	Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.
Memory Verify Error at ...	Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.
OFFENDING ADDRESS NOT FOUND	This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.
OFFENDING SEGMENT:	This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.
PRESS A KEY TO REBOOT	This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.
PRESS F1 TO DISABLE NMI, F2 TO REBOOT	When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.
RAM PARITY ERROR - CHECKING FOR SEGMENT ...	Indicates a parity error in Random Access Memory.
Should Be Empty But EISA Board Found PLEASE RUN EISA CONFIGURATION UTILITY	A valid board ID was found in a slot that was configured as having no board ID. NOTE; When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
Should Have EISA Board But Not Found PLEASE RUN EISA CONFIGURATION UTILITY	The board installed is not responding to the ID request, or no board ID has been found in the indicated slot. NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
Slot Not Empty	Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board. NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...	Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.
Wrong Board In Slot PLEASE RUN EISA CONFIGURATION UTILITY	The board ID does not match the ID stored in the EISA non-volatile memory. NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
FLOPPY DISK(S) fail (80)	Unable to reset floppy subsystem.
FLOPPY DISK(S) fail (40)	Floppy Type dismatch.

Table 3-8 POST Messages (Continued)

Message	Description
Hard Disk(s) fail (80)	HDD reset failed
Hard Disk(s) fail (40)	HDD controller diagnostics failed.
Hard Disk(s) fail (20)	HDD initialization error.
Hard Disk(s) fail (10)	Unable to recalibrate fixed disk.
Hard Disk(s) fail (08)	Sector Verify failed.
Keyboard is locked out - Unlock the key.	BIOS detect the keyboard is locked.
Keyboard error or no keyboard present.	Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.
Manufacturing POST loop.	System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for M/B burn in test.
BIOS ROM checksum error - System halted.	The checksum of ROM address F0000H-FFFFFH is bad.
Memory test fail.	BIOS reports the memory test fail if the onboard memory is tested error.

Device Diagnostics Utility

Operational check for the devices connected to the SR-600 is accomplished.

The device diagnostics utility can perform the following tests:

- TM printer printing test
- Customer display test
- Cash drawer operation test
- Serial port loop-back test
- LPT1 port loop-back test
- Printer connected to LPT1 printing test
- Ethernet loop-back test

Conditions for Running Device Diagnostics

Device diagnostics utility is performed under the following conditions shown in the table.

Table 3-9 Conditions

Setting	Condition
Connection to the TM printer	The TM printer needs to be connected to SR-600. Connect the printer to either COM port or LPT1, even if you will not test the TM printer.
Setting of the TM printer DIP switches	Set the receiving buffer to maximum. Set selection switch (customer display connection / non-connection) to non-connection (if it has a selection switch). Set the communication settings following the instructions, if the TM printer does not have an ID function. (ESC/POS **GS I** command). Baud Rate : 9600 bps Word Length : 8 bits Parity : None Refer to the TM printer manual for the setting procedure.
DM display connect port	Connect the DM display to DM display port, when the DM display is tested.
Setting of DIP switches for the DM display	When the TM printer is connected to COM1: Set the communication settings following the instructions, when the TM printer has the ID function (ESC/POS **GS I** command). Baud Rate: Same setting as for the TM printer (9600 bps) Word Length: Same setting as for the TM printer (8 bits) Parity: Same setting as for the TM printer (None) Set the communication settings following the instructions, if the TM printer does not have the ID function. (ESC/POS **GS I** command). Baud Rate : 9600 bps Word Length : 8 bits Parity : None When the TM printer is connected to another port besides COM1: Set the DM display communication settings following the instructions. Baud Rate : 9600 bps Word Length : 8 bits Parity : None Refer to the DM display manual for the setting procedures.

Table 3-9 Conditions

Setting	Condition
Connection to the cash drawer	Connects to the cash drawer to test the kick back operation of the drawer.
Connection to the loop back connector	Connects the loop-back connector to the port running test, when performing a loop-back test to LPT1.
Serial port, LPT port setting	It sets to the default setting with BIOS setup utility, when changing the setting of serial port and LPT1 port.

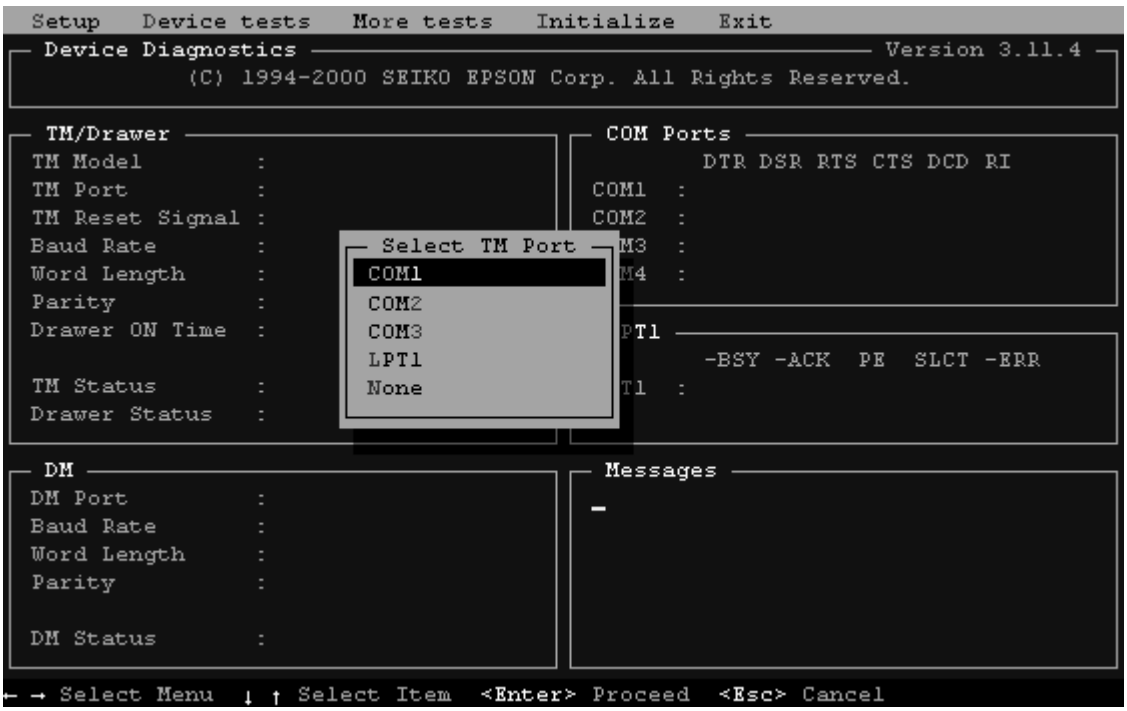
Basic Operation

Starting the device diagnostics utility

To run diagnostics, press the **F10** key when you start the system. The message "Diagnostics program will execute after POST" is displayed, and the device self-diagnostic utility starts up.

Initial screen

When the device diagnostic utility starts, the following screen appears.



3-1 TM port selection

Press left or right arrow to select the port connected to the TM printer, then press enter. The device diagnostics utility confirms the TM and DM connection and displays their status on the screen.

The device diagnostics utility displays the option connectivity status and runs the operation test. Follow these guidelines for using device diagnostics:

- ❑ To display a pull-down menu, use the left arrow or right arrow key to highlight the option; then press **Enter.** You also can see the pull-down menu if you press the key for the first letter of the option. (The initialize option does not have a pull-down menu.)
- ❑ To select an option from the pull-down menu, use the up arrow or down arrow key to highlight the option; then press **Ente**r. If the option has a dialog box, you see it when you press **Enter**. You also can see the pull-down menu if you press the key for the first letter of the option.
- ❑ Press **Esc** to close a pull-down menu or a dialog box.
- ❑ Press the **Backspace** key to correct typing.

Initialize

When you select "Initialize" from the menu bar, device diagnostics restarts the program. If device diagnostics displays "no communication" for the TM status of TM / Drawer area or DM status of DM area, fix the problem. Then select this option to reset the program.

Exit

When "Exit" is selected from the menu, the device diagnostics is closed and the SR-600 restarts.

Device Diagnostics Utility Screen

The device diagnostics utility screen is divided into the following five areas:

- ❑ TM / Drawer
- ❑ DM
- ❑ COM Ports
- ❑ LPT1
- ❑ Messages

TM/Drawer

The TM / Drawer area of the device diagnostics screen displays communication settings, cash drawer driving pulse signal width, and the status for the TM printer and cash drawer.

Table 3-10 TM/Drawer Information

Setting	Description
TM model	Displays the model name, depending on the type of TM printer attached. (EPSON TM printer with ID function only)
TM port	Displays the TM printer connection port you selected when you started device diagnostics.
TM reset signal	Indicates the signal to reset the TM printer. None is displayed, since SR-600 does not have reset signal.
Baud rate	Indicates the baud rate device diagnostics is using to communicate with the TM printer.
Word length	Indicates the word length device diagnostics is using to communicate with the TM printer.
Parity	Indicates whether device diagnostics is using parity to communicate with the TM printer.
Drawer ON time	Displays the pulse width of the signal for opening the cash drawer.
TM status	Indicates the status of the TM printer. Refer to the “TM Status Messages” table below for more details on the messages.
Drawer status	Displays the status (High/Low) of the cash drawer.

Table 3-11 TM Status Messages

Message	Priority	Description
Disable	-	The port connected to the TM printer is disabled. Set at Enabled using BIOS setup.
No communications	-	•Displays this message when a TM printer that does not have ID function (ESC/POS **GS I** command) is connected. Check whether TM printer DIP switches are set at the following. Baud Rate :9600bps Word Length :8 bits Parity :None Although the screen indicates "No communication," device diagnostics can communicate with the TM printer if DIP switches are set correctly. If something is wrong, check the "check list" listed below. •The device diagnostics utility cannot communicate to a TM printer that does not have the ID function (ESC/POS **GS I** command). Check the following items: •Interface and power cables are connected to the TM properly. Be sure to turn off the SR-600 before you connect the cables. •The TM printer power switch is on. •The connected TM printer was selected in the device diagnostics port. •The TM printer is not performing a self-test when device diagnostics starts (Do not perform self-test). •The paper FEED button is pressed when device diagnostics starts (Do not press the paper feed switch). If the TM printer does not meet these conditions, correct the problem and select the Initialize option from the menu bar. If the printer meets all the above conditions, one of the following may have occurred: •The print head has overheated. • The TM printer is not working. •The TM printer interface circuit of the SR-600 is not operating normally.
Hardware error	1	The print head is overheated, or the printer is not working.
Paper feeding	2	The TM printer is feeding paper.
Receipt end	3	The receipt paper path contains no paper.
Journal end	4	The journal paper path contains no paper.
Paper near-end	5	The paper roll is out of paper or is not installed.
Receipt near-end	6	The receipt paper roll is out of paper or is not installed.
Journal near-end	7	The journal paper roll is out of paper or is not installed.
Cover open	8	The printer cover is open.
Online	9	The printer is online. It is possible to do a TM print test.

*If Device Diagnostics detects more than two TM status items, it displays the highest priority message. (Priority code 1 is higher than priority code3.)

DM

The DM area on the screen indicates the communication settings and status of the DM display.

Table 3-12 DM Information

Setting	Description
DM port	Indicates the port the device diagnostics utility is using to transmit data.
Baud rate	Indicates the baud rate device diagnostics is using to communicate to the DM display.
Word length	Indicates word length device diagnostics is using to communicate to the DM display.
Parity	Indicates whether device diagnostics is using parity to communicate to the DM display.
DM status	Indicates DM display status. Refer to the table below for more details .

Table 3-13 DM Status Messages

Message	Description
Disable	The setting of the port connecting the DM display is incorrect. It sets the port from BIOS Setup.
No communication	Device diagnostics cannot communicate with the DM display. Check the TM printer and DM display for the following: The DM display is properly connected. Be sure to turn off the SR-600 before you connect the cables. •The data communications DIP switch is the same for the DM display and the TM printer. •DM display main power switch is on. •The DM display is not doing a self test. (Do not perform self-test.) If DM display does not meet these conditions, correct the problem and select the Initialize option from the menu bar. If the TM printer and DM display meet the conditions above, one of the following may have occurred: •DM display interface circuit on the this product is not working. •DM display is not working.
Busy	DM display's condition is busy. It is possibly caused by the following: •The DM display is running a self test. •After the device diagnostics started, the DM display power was turned off.
Ready	The DM display is ready to receive data. The DM display test is possible.

COM ports

The area of the screen for COM ports lists the DTR, DSR, RTS, CTS, DCD, and RI status for each available COM port. When the port is disabled, you see a message to that effect.

LPT port

The LPT1 area of the screen lists the BSY, ACK, PE, SLCT, and ERR status for the LPT1 port including RDT, CLI, SDT, and CLO status for the OCIA port.

Messages

The message portion of the screen displays the result of tests.

Table 3-14 Message area

Test category	Message	Description
TM printer	Disabled	This port is disabled.
	Done	The TM printer test is completed. Check the printing motion and autocutter motion.
DM display	Disabled	This port is disabled.
	Done	DM display test is completed. Check display.
Drawer kick-out	Disabled	This port is disabled.
	Done	The drawer kick-out test is completed. Check the motion of cash drawer.
Loop-back	Error	The diagnostics test failed. This message also appears when a loop-back connector is not connected or the wrong loop-back connector is connected.
	Disabled	This port is disabled.
	OK	The test completed successfully.
LPT1 print	Time out	The printer connected to the LPT1 port did not enter a ready state after 2 seconds.
	Disabled	This port is disabled.
	Ok	The print data was sent successfully.

Setup Menu

Following three commands can be executed from the Setup menu.

- ❏ Drawer Password
  It sets the password to access to the drawer kick out test.

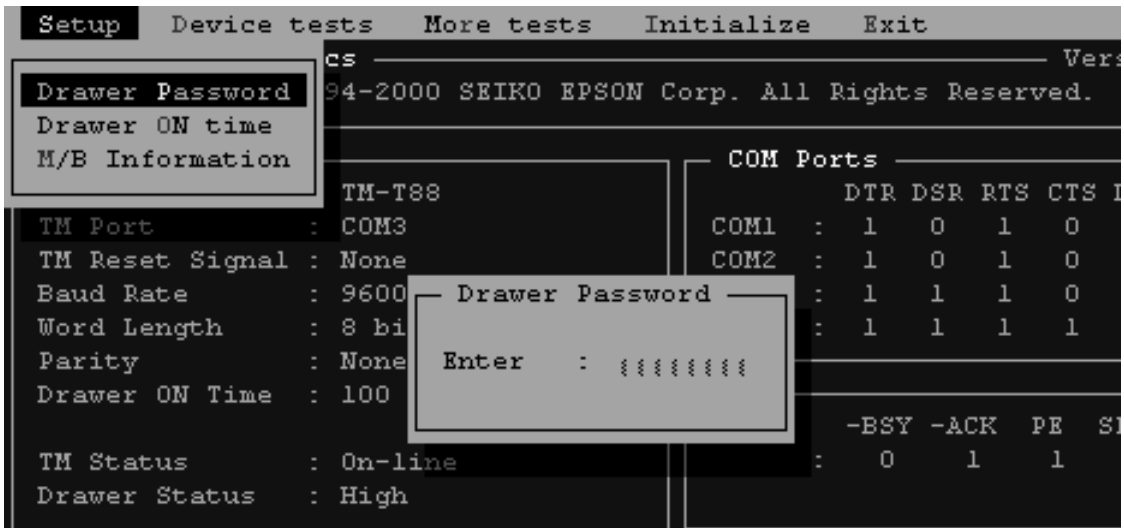
- ❏ Drawer ON time
  It sets the length of time for the voltage signal supplied to the cash drawer solenoid to open it.

- ❏ M/B Information
  Displays the various informations on the motherboard.

Setting a Password for the Drawer Kick Out Test

Follow the procedures below to set a password for the drawer kick out test.

1. Select “Drawer Password” from the pull down menu. You are asked to enter the password.



3-2 Enter Password screen

2. Enter the password to be set and press Enter. The password should be 4 to 8 alphanumeric characters. Upper and lower case characters are distinguished. The Password must be at least 4 characters.

3. Message “Re-enter” appears. Input the password again and press Enter. The password is now set.

When the password is set, inputting the password is required when you try to execute the Drawer kick out test.

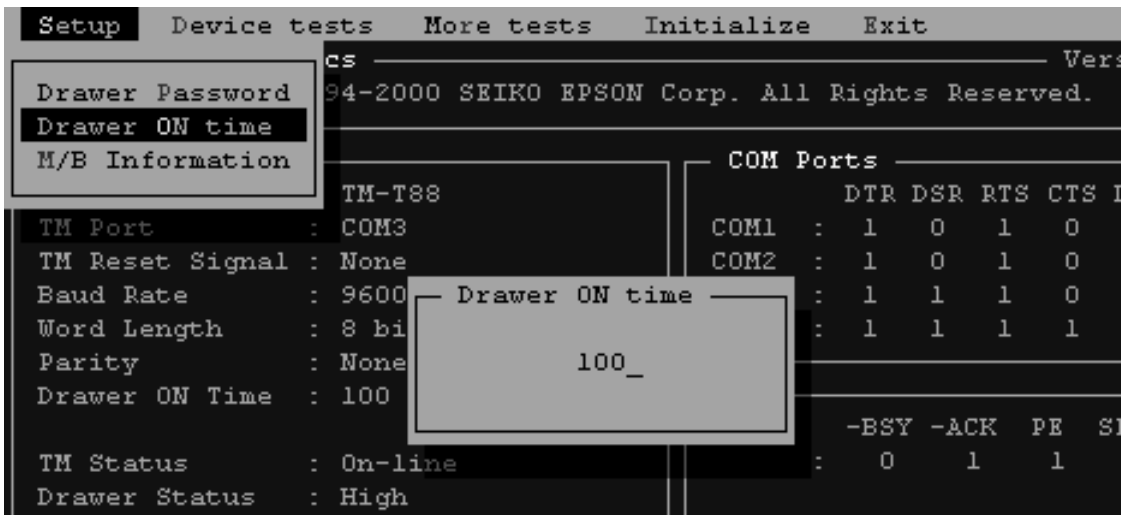
Changing/Deleting the Password for the Drawer Kick Out Test

Follow the procedures below to change or delete the password for the drawer kick out test.

1. Select “Drawer Password” from the pull down Setup menu. You are asked to enter the password.
2. Enter the current password and press Enter key.
3. Message “New” appears.
4. Press Enter key only to delete the password. Enter new password and press Enter key to set a new password.
5. Message “Re-Enter” appears. Enter the password again and press the Enter key to change or delete the password.

Setting Drawer ON time

Drawer ON time option sets the length of time for the voltage signal supplied to the cash drawer solenoid to open.



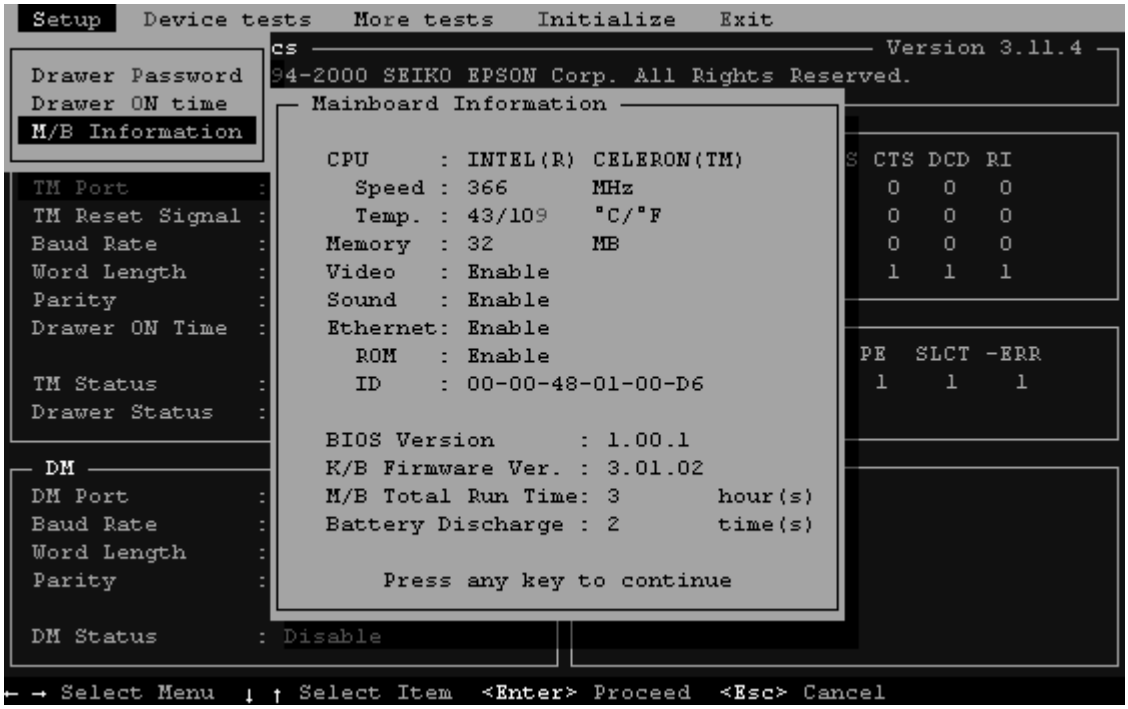
3-3 Enter Drawer On Time screen

Select Drawer ON time option from the Setup pull down menu to set the time. The dialog box appears. Set the length of the voltage signal required by the cash drawer in ms unit. The On time can be set at any value within a range of 0 to 500 ms. The setting is rounded to the minimum units that can be set by the TM that you are connected to. For the TM-930, the minimum units are 10 ms, and for other TMs, the minimum units are 2 ms.

Please refer to the cash drawer’s manual for the appropriate value to enter.

M/B Information

When the M/B Information is selected from the pull down menu, various main board information is displayed. Press any key to close the display.



3-4 Mainboard Informations

M/B information displays following information:

- CPU (CPU)
- CPU speed (Speed)
- CPU temperature (Temp)
  It displays in Celsius and Fahrenheit within a range of 0 to 125 Celsius.
- Memory capacity (Memory)
  MB (megabyte) unit
- Enable / Disable the On Board Video Controller (Video)
  Displays "Enable" in the normal operation and "Disable" in other situations.
- Enable / Disable the Sound Daughter Board (Sound)
  Displays "Enable" in the normal operation and "Disable" in other situations.
- Enable / Disable the On Board Ethernet Controller (Ethernet)
  Displays "Enable" in the normal operation and "Disable" in other situations.

- Enable / Disable the Ethernet Controller Boot-ROM(ROM)
  Displays "Enable" in the normal operation and "Disable" in other situations.

- Ethernet ID(ID)
  Displays 12 digit hexadecimal numbers separated by hyphens. Only a hyphen is displayed if there is no controller.

- BIOS version (BIOS Version)

- Keyboard Firmware Version (K/B Firmware Version)

- Main Board Total Run Time (M/B Total Run Time)
  Displays in hours. Maximum of 1193046 hours.

- Battery Discharge
  Rechargeable for a maximum of 65535 times.

Device Test Menu

The test for each devices can be performed from the Device Tests and More Tests menu. The device test is explained below.

❑ TM print test
The following tests are run in the TM print test.
Print test for receipt paper (Standard print pattern)
Autocutter test (restricted to those printers with Autocutter)
When the test is completed, "TM print test:done" message appears on the message area. Make sure that the print pattern is printed. And check that the receipt paper is cut by the autocutter if the printer is equipped with an autocutter.
TM print test is not performed if the TM Status is Disable or No communication.

❑ DM display test
Sends following messages to the DM display.
Display Module Test
**** Device Diagnostics ****
Check the DM display and make sure that the test is performed.
Press any key to finish the test. The message "DM display test: done" appears on the message area.
DM display test is not performed if the DM Status is Disable or No communication.

❑ Drawer kick out test
Drawer kick out test opens the cash drawer. Make sure that the cash drawer board opens normally. TM printer has drawer kick out drive signal (Signal 1 and 2). This test is effective only for drawer kick out drive signal 1.
If the password has been set for the drawer kick out test, it asks your password to run the drawer kick out test.
Drawer kick out test is not performed if the DM Status is Disable or No communication.

❑ COM1 / COM2 / COM5 / COM6 loop-back
Runs data transmission test of serial port. It performs data transmission to a target port, therefore, it is required to connect a loop-back connector to the target port. COM port test

checks DTR, DSR, CTS, RTS, TXD and RXD signals.
If the test is completed normally, “OK” message appears on the message area. If the test is failed, an error message appears.

- LPT1 loop-back
  Performs LPT1 signal line test. It performs data transmission to a target port, therefore, it is required to connect the loop-back connector to the target port. LPT1 port test checks - STROBE, ACK, DATA0, BUSY, AUTO FEED, PAPER EMPTY, ERR, INIT, SELECT IN and SELECT signals. The loop-back test does not test the data line. Perform the data line check on the LPT1 print test.
  If the test is completed normally, “OK” appears on the message area. If the test is failed, an error message appears.

- LPT1 print test
  LPT1 print test prints out the standard print pattern to the printer connected to the LPT1 port.
  If the test is completed normally, “OK” message appears on the message area. If the test is failed, error message appears.

- Ethernet test
  Performs loop-back test of the Ethernet controller. It is not required to connect any object to run the test, because it runs with internal loop-back function of the controller.
  If the test is completed normally, “OK” appears on the message area. If the test is failed, an error message appears.

Chapter 4
Driver / Utility Specifications

Utilities for SR-600 listed below are explained in this chapter.

MS-DOS

- Fujitsu Touch Panel Driver 1.0 (English)
- Realtec Network Driver 3.80 (English)
- Matsushita CD-ROM Driver 98/05/08 version (Japanese/English)
- EPSON DM-MSE series Setup Utility 1.00 (English)

Windows95

- INTEL Chipset INF Utility 2.20.0006 (English)
- EPSON Touch Panel Driver 1.00 (English)
- Chipset & Technologies Display Driver 4.11.01.2500 (all available languages)
- Realtec Network Driver 5.374.0214.2000 (English)
- EPSON DM-MS series Setup Utility 1.00 (Win version, English), 1.00 (DOS version, English)
- EPSONLogon Utility 1.02 (English)
- EPSON OPOS ADK 1.96 (Japanese/English)
- EPSON TM Driver 2.01 (Japanese/EnglishChinese Traditional/Chinese Simplified)

Windows98

- EPSON Touch Panel Driver 1.00 (English)
- Chips&Tech Display Driver 4.11.01.2600 (all available languages)
- Realtec Network Driver 5.367.0901.1999 (English)
- EPSON DM-MS series Setup Utility 1.00 (Win version, English), 1.00 (DOS version, English)
- EPSON Logon Utility 1.02 (English)
- EPSON OPOS ADK 1.96 (Japanese/English)
- EPSON TM Driver 2.01 (Japanese/EnglishChinese Traditional/Chinese Simplified)

Windows NT 4.0

- EPSON Touch Panel Driver Ver. 1.01 (English)
- Chips And Technologies Video Driver Ver.1.29 (all available languages)
- Realtek Network Driver Ver.4.364.0719.1999 (English)
- EPSON DM-MS series Setup Utility Ver 1.0.2 (English)
- EPSON Windows Printer Driver
- EPSON Logon Utility Ver.1.01 (English)
- EPSONScreen Saver Ver.1.01 (English)

Windows2000

- EPSON Touch Panel Driver Ver. 1.01 (English)
- EPSON DM-MS series Setup Utility Ver 1.0.2 (English)

Confidential

The Driver and Utility listed below are explained in this Chapter. Refer the Chapter 2 " OS and Driver Setup" and Chpater 6 "Peripherals / Option Installation" for the details of Driver and Utility not listed below.

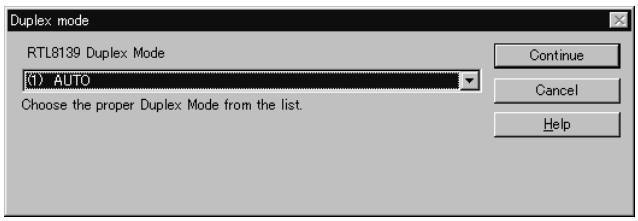
- Network Driver (See section 4-3)
- Video Driver (See section 4-4)
- Logon (Software Keyboard) Utility (See section 4-5)
- Screen Saver (for NT) (See section 4-7)
- EPSON OPOS ADK (See section 4-11)

Network Driver

Installation

Follow the steps below to install the Driver for NT Network. Refere the Chapter 2 “OS and Driver Setup” for other OS installation procedures.

1. Open the Control Panel and double click “Network”. The dialog shown below is displayed. Click [Yes] button.
2. "Network Setup Wizard” starts. Select “Connect to the Network” check box and click [Next] button.
3. Click [Select from the list] button.
4. Click [Use Disk] button.
5. Tyepe “C:backup¥network” and click [OK] button.
6. Select “RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter” and click [OK] button.
7. "RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter” is added to the Network Adapter. Click [Next] button.
8. Click the Network Protocol that you want to install, then click [Next] button.
9. Click the Network Service that you want to install, then click [Next] button.
10. Next dialog is displayed, then click [next] button. It starts installation.
11. Set the Duplex Mode. Select [(1)AUTO] , then click [Continue].



12. Reboot the system after the installation.

Video Driver

Chipset & Technologies Video Driver is used for DM-LS121S and DM-LS121T LCD unit.

VGA/SVGA

DM-LS121S and DM-LS121T are a SVGA (800 x 600)panel. If it displays as VGA screen (640 x 800), the screen appears in the center of the screen and the whole screen is not displayed.The resolution of SR-600 is set at standard VGA (640 x 480) as a default. Therefore, the resolution needs to be set at SVGA in Windows 95/98.

Follow the steps below to adjust the resolution of LCD unit.

1. Connect with the external monitor. Open the Windows Control Panel. then change the resolutin to 800 x 600.

2. Set the Color. 256 colors are displayed on the SVGA LCD unit. If more than 256 colors are displayed, the resolution are set at 640 x 480.

3. Reboot the system. Press the **Del** key, then start the BIOS setup.

4. BIOS is updated to support the SVGA Display.

⚠ CAUTION:

Do not use SVGA BIOS in VGA LCD,or VGA BIOS in SVGA LCD. It may shorten the life of the Display.

Back light control for VGA LCD cannnot be used in Power Management.

Log on (Software Keyboard) Utility

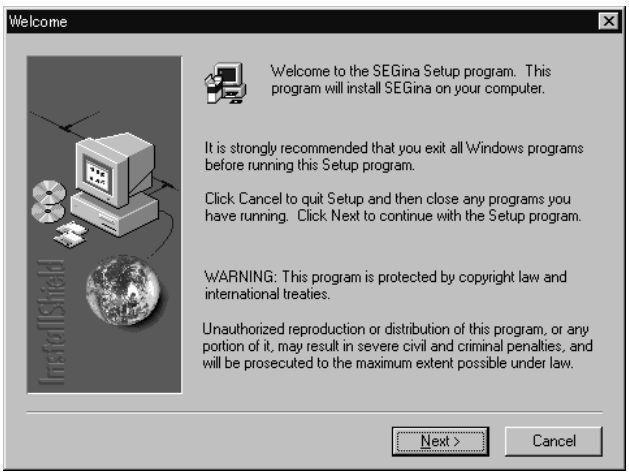
SEGina (SEIKO EPSON Image Identify Certification) tool enables Windows NT 4.0 user to log on from the software keyboard and use the software keyboard after logging on.

By clicking the software keyboard key displayed on the screen with mouse, you can input the data to the executed Window. Drag the upper part to move the software keyboard.

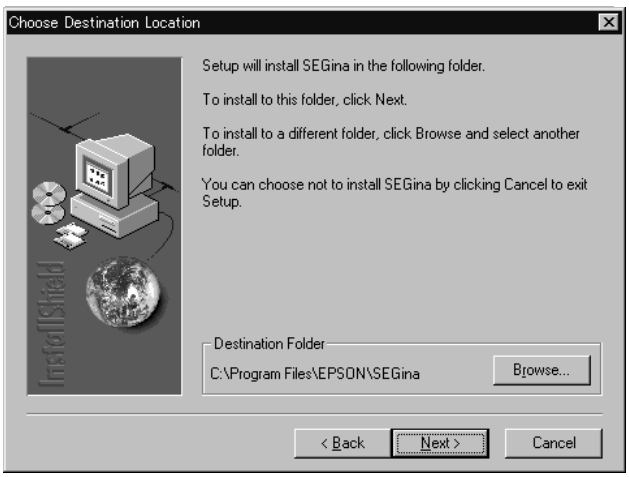
Installation

The document about the software installation is in "C:\Backup\Logon" directory - readme file. Follow the steps below for the installation.

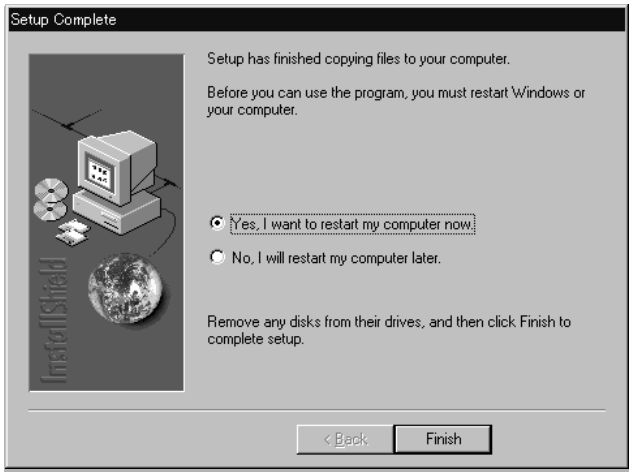
1. Execute C:\backup\logon\Setup.exe. The dialog shown below is displayed. Click [Next] button.



2. Specify the directory sinstalling to. "C:\Program Files\EPSON\SEGina\" is selected as an default. Click [Next] button, then it starts installation.



3. The dialog shown below is displayed after the installation. Select [Yes] and click [Finish], then reboot the system.



⚠ *CAUTION:*

Reboot the system after installed SEGina to Windows NT 4.0. If Actinkey is executed without rebooting the system, it may cause some problems. If any problems occur, reboot the system.

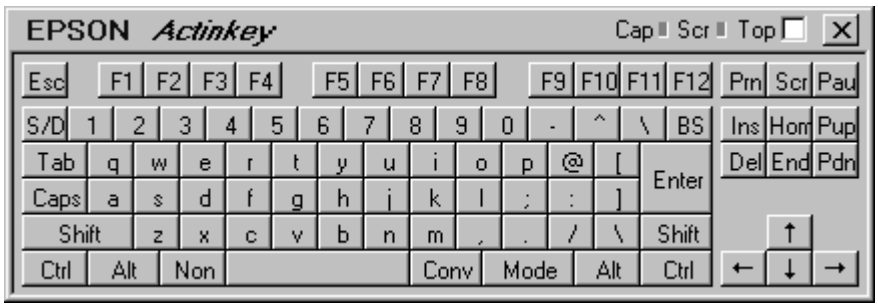
How to use the sortware ketboard

The following three Modules are installed:

- SEGina - Controls Logon from the Main Module
- Logonkey - Software keyboard displayed during logon
- Actinkey - Software keyboard displayed after logon

Logonkey is displayed with logon dialog in Windows NT 4.0 when the System is turned on.

Select **Actinkey** from the start menu to use software keyboard after the nstallation. **Actinkey** is displayed.



Select the “Top” check box on the upper right corner of the screen, then software keyboard is displayed on the top all the time.

To exit the **Actinkey**, click [x] button on the upper right corner of the screen.

⚠ *CAUTION:*

Do not use this tool for the hardware keyboard. It may send incorrect keyboard status if hardware keyboard is used. This tool is for 101/102/106 type keyboard. However, its operation is not guaranteed other than Japanese or English Operation System.

Screen Saver (For NT)

This is a Windows NT dedicated screen saver. When this screen saver starts, LCD back light is turned off. When the screen saver is closed, LCD back light is turned on. It extends the life of LCD supplies and increases reliability. It also reduces the power consumption during the System-idle mode.

Installation

Follow the steps below to install the screen saver.

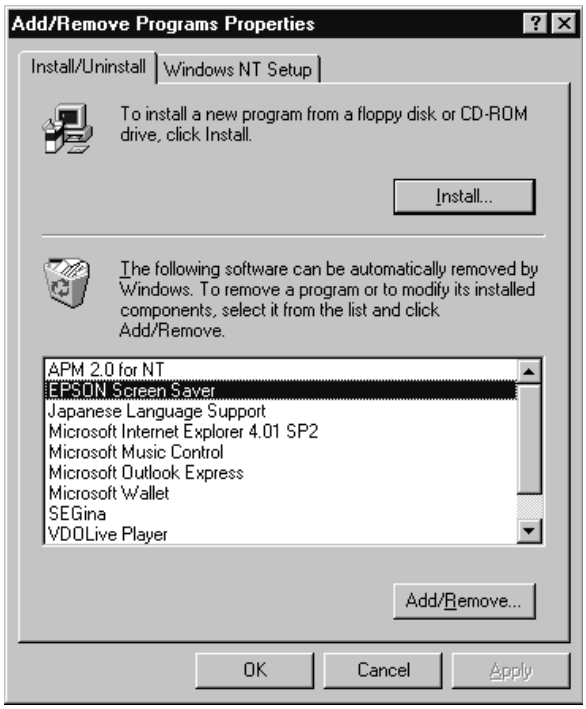
1. Select EPSSS4NT.EXE.
2. Double click EPSSS4NT.EXE, then strat the installation.
3. The screen shown below is displayed. Check the contents of the document and click [Next] button.

4. The screen shown below is displayed after the installation. Select [Yes] radio button and click [OK], then reboot the Windows.

Uninstallation

Follow the steps below to uninstall the screen saver.

1. Open the Control Panel.
2. Double click “Add / Delete Application”
3. Click “Installation and Delete” tab, then select “EPSON Screen Saver” from the list box.



4. Click “Add and Delete” button.

5. The diagram shown below is displayed. Click [Yes] button.

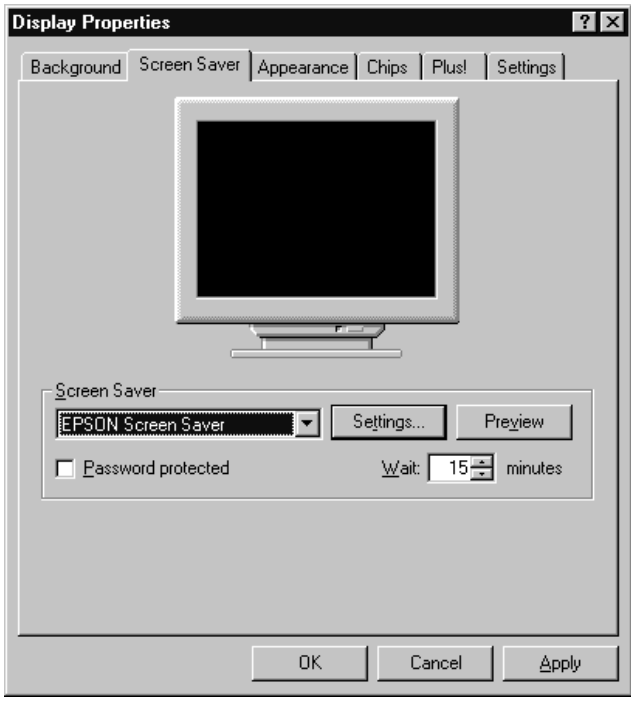
6. The screen shown below is displayed after the uninstallation. Click [OK] button, then reboot the Windows.

Screen Saver Setting

Follow the steps below to set the screen saver.

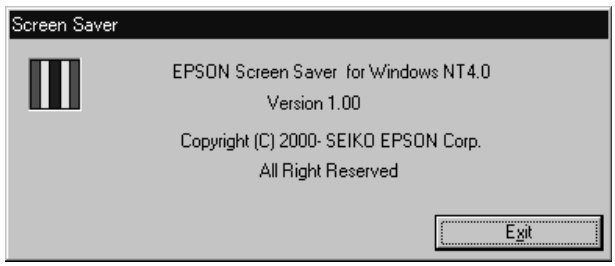
1. Open the Control Panel.
2. Double click “Screen”.

3. The screen below is displayed when “Screen Saver” tab is clicked.



4. Select “EPSON Screen Saver” from the “Screen Saver” Group box in the drop down list.

Sets the "Waiting Time for the execution" from the "Screen Saver" Group box.
The Virsion information shown below is displayed when the "Setting" button is clicked.



EPSON OPOS ADK

OLE (Object Linking and Embedding) is component software that runs on Win 32-bit style operating systems, such as Microsoft Windows NT 4.0. The creation of software components enables software reuse and backward compatibility.
The purpose of OLE POS ("OPOS") is to use OLE to standardize the control system (API) of POS peripherals, thereby making application and peripheral equipment control software open and generic, OPOS standardizes the interface between POS applications and device control objects, which in the past have differed by device and by manufacturer; it also facilitates the porting of applications and the reconfigurations of peripheral devices.

Such standardization of peripheral devices eliminates much of the work once needed to developsoftware. Further, it totally opens systems and makes it possible to build intelligent, flexible POS systems affordably, not only in large retail stores but even in the smallest shops, where POS has yet to make inroads.

OPOS makes it easy to build POS applications that take advantage of the functionality that Windows has to offer, such as graphics, video, and sound, a user-friendly GUI, and multitasking.

Refer the User's Guide stored in the directory C:\Backup\Oposadkfor for more dtails of the OPOS ADK installation procedure.

The creation of component software

POS devices require a control program. In the past, the device control object existed as part of a monolithic POS application software. Because of this monolithic structure, POS systems designers would have to replace or revise the entire POS application software just to change the device control object when a peripheral device was changed. This, of course, was a time-consuming and costly process. It also meant that to create device control objects, POS application software developers had to acquire detailed technical knowledge of each manufacturer's devices, including their functions and command systems.

With the advent of PC-POS, however, any external device could be connected to the PC, as long as the interface (e.g., serial or parallel) was supported. While the hardware compatibility problem was solved, the software problem was not. Software could not be adapted and the POS applications software itself would have to be replaced. Thus a total opening of PC-POS systemsin terms of both hardware and software had not been achieved.

To solve this problem, the device control objects were modularized and made independent from the POS applications software. This simplifies the process of changing the POS application software itself when a device is replaced because now only the device control object needs to bereplaced. In addition, by providing our own device control objects, we can lighten the burden on our POS applications software developers, who no longer need to acquire detailed knowledge of each manufacturer‘s device and standardize the total system, hardware as well as software.

Software standardization

When a device control object is created, it is necessary to choose the interface (API) between the POS application software and the device control module. EPSON has joined an industry-wide and worldwide effort to standardize and spread the use of APIs. The standardized software usesan OCX driver, which is modularized software divided into two levels: the Control Object (CO) and Service Object (SO).

A separate CO exists for each class of device, while a separate SO exists for each individual device. For example, software that uses a TM-U950 needs a general POS printer CO and a specific TM-U950 SO. If the TM-U950 printer were replaced by a TM-U375 printer, the TM-U950SO would have to be replaced by a TM-U375 SO, but the rest of the software, including the POS printer CO would remain the same. In other words, to switch from one printer to another requires only a change in the SO.

EPSON software

The software products (OCX drivers) that EPSON offers to enable such an OPOS system are called the EPSON OPOS ADK. The EPSON OPOS ADK provides the OCX driver and much more. EPSON also provides custom tools to support the construction and development of an OPOS application software development environment.

Chapter 5
Hardware Specifications

Circuit Board Functions

Descriptions of the circuit board used in the SR-600 are listed below.

- Motherboard
  The circuit board unit that contains the basic functions for the PC.
  This contains CPU, chip set, memory(DIMM), Super I/O, power supply unit (DC - DC Converter) and so on.

- Video board
  This is connected to the motherboard and acts as a system relay on the LCD, and performs LVDS conversion for the TFT. A single circuit board supports the TFT LCD panel and the DSTN LCD panel.

- PCI board
  This connects to the PCI expansion board, and is connected to the motherboard.

- Volumeboard circuit board
  This consists of the keyboard I/F, reset switch of the SR-600, power switch and speaker volume, and is connected to the motherboard with a cable.

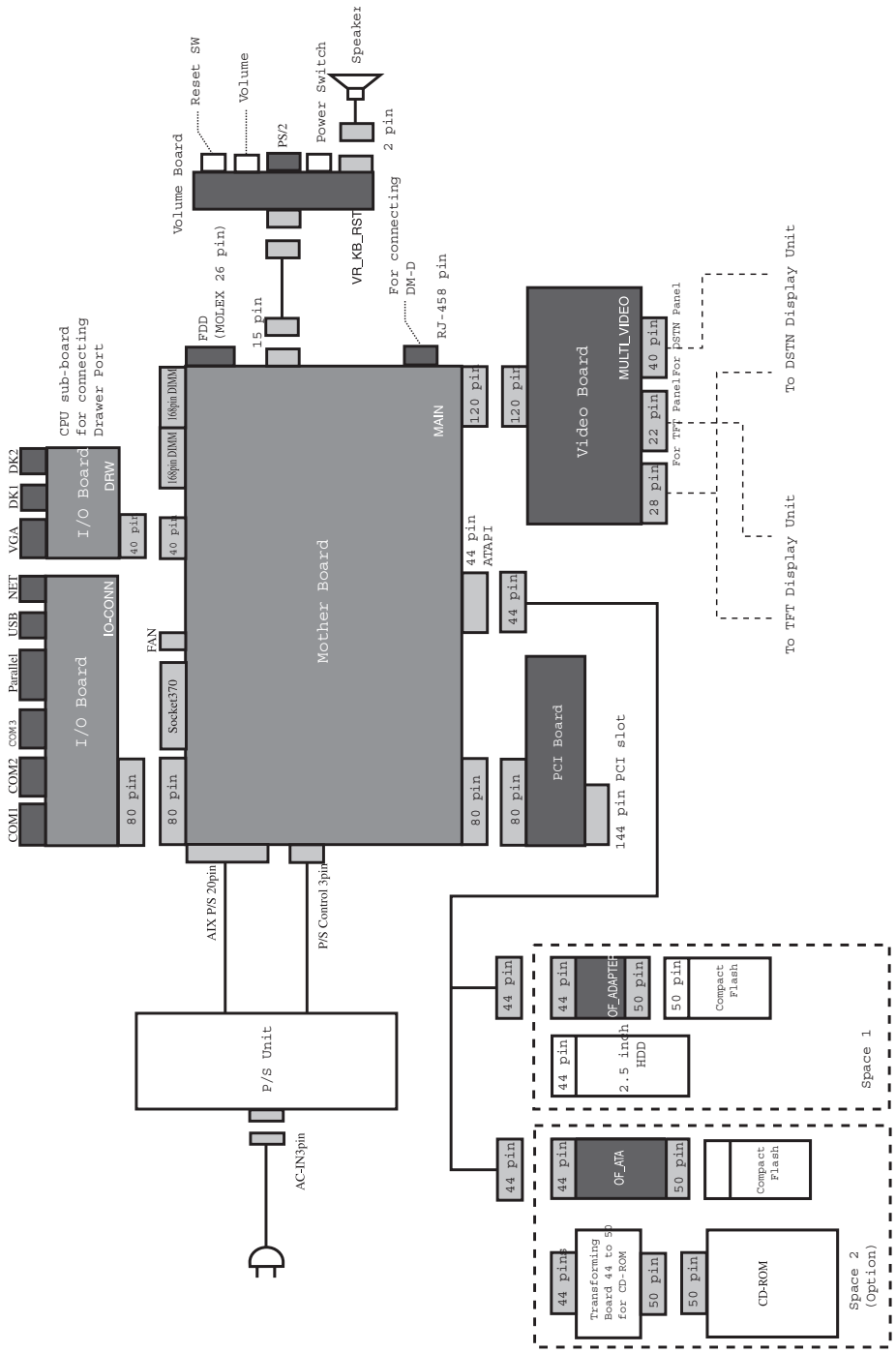
- I/O board
  The circuit board that contains the interface connectors of the external I/O consists of three serial ports, one parallelport, USB2 port and LAN1 port.

- Drawer board/CRT board (Option)
  The circuit board that adds 2 drawer ports and an external CRT1 port.

System

System Diagram

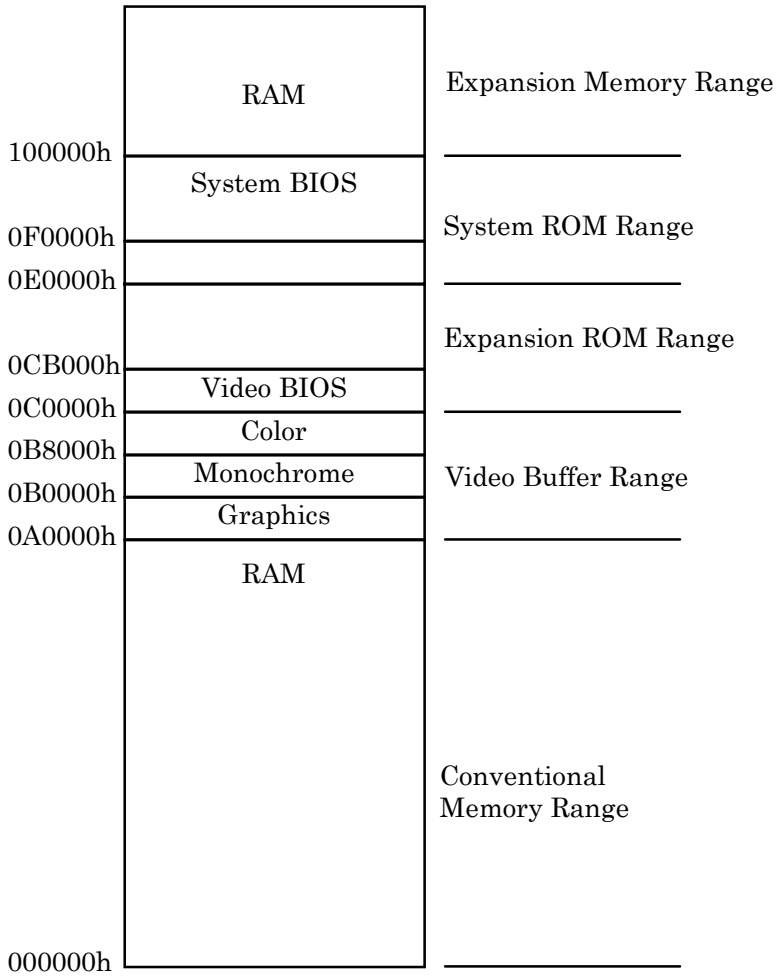
The SR-600 system diagram is shown below.



5-1 System diagram (Motherboard)

Memory Map

The SR-600 has a 256KB Flash ROM as a system ROM.
After the BIOS starts, the SYSTEM BIOS is assigned to the 64 KB space 0F0000h through 0FFFFFh and the Video BIOS is assigned to the 44KB (40KB for the IM-300) space 0C0000h through 0CBFFFh.



5-2 Memory Map

I/O Map

The SR-600 system I/O map is PC/AT-compatible. The I/O address assignments are shown below. The changes in the serial and parallel ports I/O addresses is available from the BIOS setup program or Plug & Play function.

Table 5-1 I/O Map

I/O address	Description	Can be changed	Device
00h-1Fh	DMA controller 1 (8237A)	×	82371EB
20h-3Fh	Interruption controller 1 (8259A)	×	82371EB
40h-5Fh	Timer/ Counter (8254)	×	82371EB
60h-6Fh	Keyboard controller (8042)	×	FDC37B807
70h-7Fh	Real time clock, NMI mask	×	82371EB
90h-9Fh	DMA page register	×	82371EB
A0h-BFh	Interruption controller 2 (8259A)	×	82371EB
B2h-B3h	Advanced Power Management Control	×	82371EB
C0h-DFh	DMA controller 2 (8237A)	×	82371EB
F0h	Co-processor error	×	82371EB
170h-177h	Hard disk controller (Secondary)	×	82371EB
1F0h-1F7h	Hard disk controller (Primary)	×	82371EB
2E8h-2Efh	Serial port 4	O	FDC37B807
2F8h-2FFh	Serial port 2	O	FDC37B807
376h	Hard disk controller (Secondary)	×	82371EB
378h-37Fh	Parallel port 1 (+400h can be used when in the ECP mode)	O	FDC37B807
3B0h-3DFh	VGA register	×	69000
3E8h-3EFh	Serial port 3	O	FDC37B807
3F0h-3F7h	Floppy disk controller (excluding 3F6h)	×	FDC37B807
3F6h	Hard disk controller (Primary)	×	82371EB
3F8h-3FFh	Serial port 1	O	FDC37B807
4D0h-4D1h	Interruption edge/ Level control	×	82371EB
CF8h-CFFh	PCI configuration register (DWORD)	×	82443BX
CF9h	Reset control (Byte)	×	82371EB
5000-5000Ch	SMBUS I/O register	×	82371EB

DMA

The 8237A-, which is equivalent to two DMA controllers and supports seven DMA channels, is mounted in the SR-600. Channels 0, 1, 2, and 3 provide 8-bit data transfers; channels 5, 6, and 7 provide 16-bit data transfers. The SR-600 uses channel 2 for the floppy disk drive controller, and releases other channels to the ISA bus.
The DMA channel assignments are shown below.

Table 5-2 DMA channel assignments

Controller	Channel	Application
DMA1 8 bits	0	(Spare)
	1	(Spare *)
	2	Floppy disk controller
	3	(Spare *)
DMA2 16 bits	4	Controller 1 cascade connection
	5	(Spare)
	6	(Spare)
	7	(Spare)

* When LPT1 is in ECP mode, use one of the channels.

System Interrupts

The system provides two cascade connections to 8259A-equivalent interrupt controller and carries 15 levels of interrupts, besides NMIs. Table 5-3 shows the application for each interrupts. However, you can change the serial and parallel interrupts from the BIOS setup program or Plug & Play function.

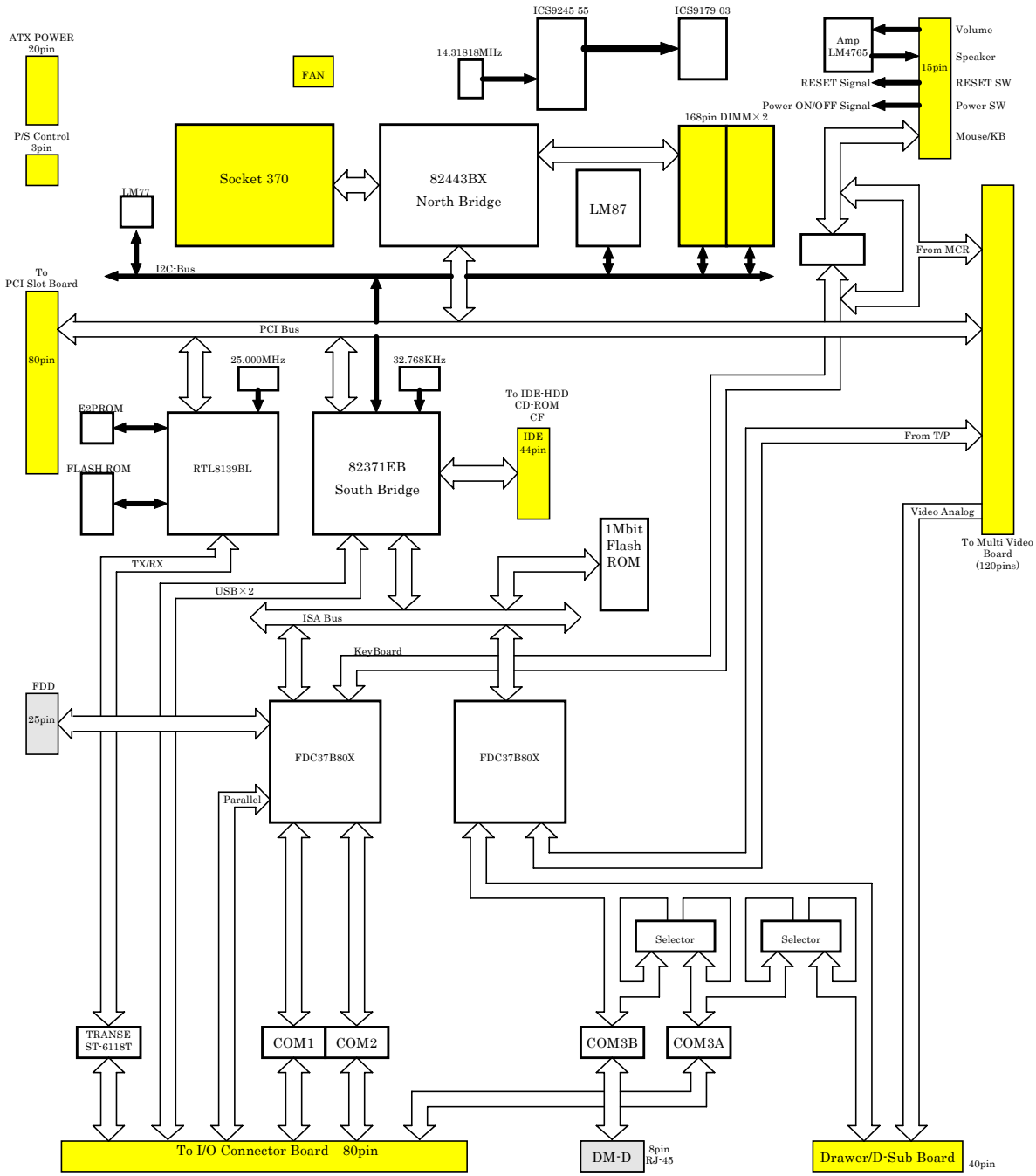
Table 5-3 System interrupts

Controller 1	Controller 2	Application	Can be changed
IRQ0		Timer	×
IRQ1		Keyboard	×
IRQ2		Controller 2 cascade	×
	IRQ8	RTC	×
	IRQ9	Not used	O
	IRQ10	Serial port 4	O
	IRQ11	Serial port 3	O
	IRQ12	Mouse	O
	IRQ13	Numerical operation co-processor	×
	IRQ14	Hard disk controller (Primary)	▲ *1
	IRQ15	Hard disk controller (Secondary)	▲ *2
IRQ3		Serial port 2	O
IRQ4		Serial port 1	O
IRQ5		Not used	O
IRQ6		Floppy disk controller	×
IRQ7		Parallel port 1	O
NMI		I/O error check	×

*1: It cannot be changed when the device is in use, but can be cleared when not in use.

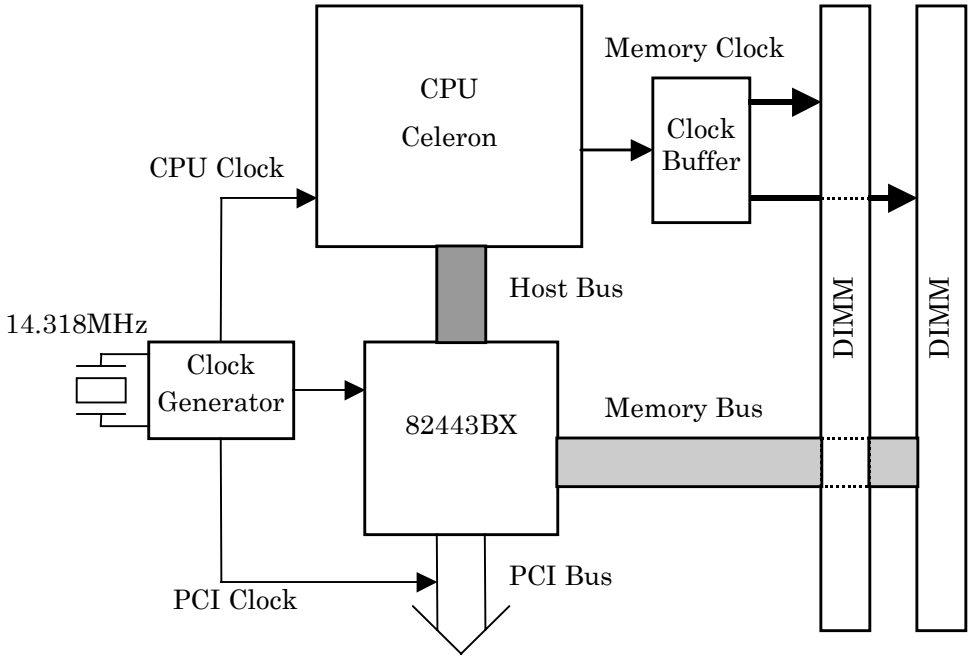
*2: IRQ15 is assigned in the secondary IED, but not used in SR-600.

Mother Board



5-3 Block diagream of the mothreboard

Peripheral CPU and Memory Circuits



5-4 Block diagram of the peripheral CPU and memory circuits

CPU (Celeron-PPGA)

An Intel Celeron processor is used. In SR-600, 370 socket type is in use.
The main specifications of the CPU are explained below. Refer to the Intel Celeron Processor Data sheet for information on items not covered here.

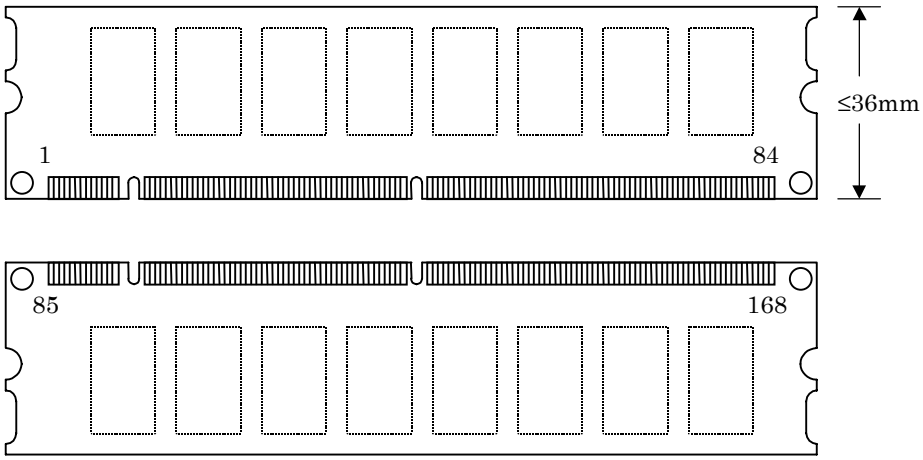
Operating frequencies:	366MHz
Base clock:	66MHz (Input from the clock generator)
L2 cache:	128KB built in
Core voltage:	2.00V The core voltage is automatically set by the CPU. (Setting a jumper is not necessary)

Memory (168pin DIMM)

Two 168-pin DIMM sockets are available, and a maximum of 256MB memory can be mounted. The DRAM only supports the 3.3V SDRAM (synchronous DRAM.) The DIMM is used singularly. It is possible to use two DIMMs with different capacities. It is necessary to conform to the Intel PC SDRAM Unbuffered DIMM Specifications for the basic specifications. The specifications are explained below.

SDRAM specifications:	Conform to the Intel PC SDRAM specifications.

Operating clock:	66MHz x 4 / sockets (input from the chipset via clock generator) DIMMs that support PC100 (for 100MHz clock) can also be used.
Usable height:	36mm or less (maximum 38.23mm in the unbuffered DIMM specification)
Serial PD (SPD):	Must conform to the Intel PC SPD specifications (memory information acquisition)
Operating mode:	Must support the self-refreshing mode

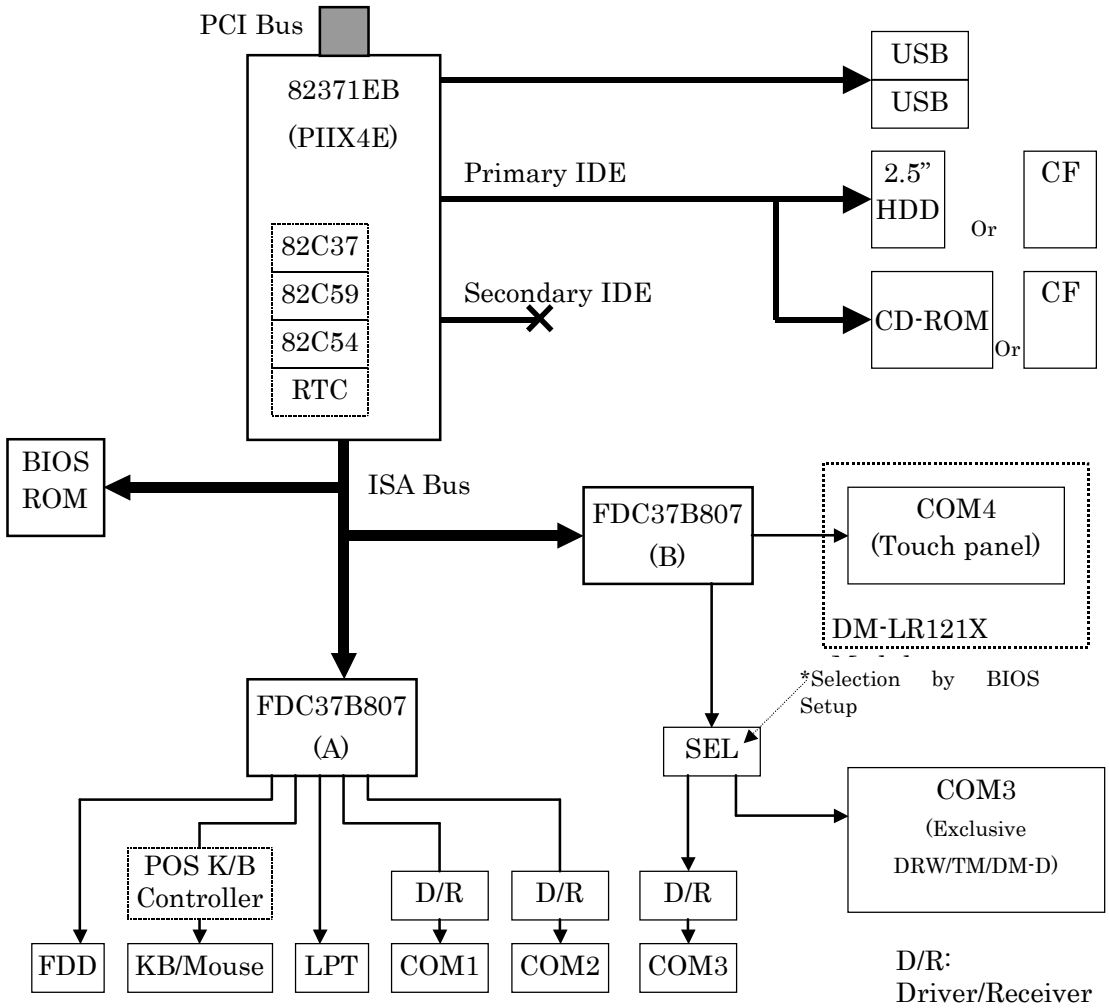


5-5 External view of the DIMM

Chip set (82443BX : North bridge)

The Intel chipset 82443BX controls CPU, memory and PCI bus. It also supports AGP bus control function, but that is not used in SR-600. Combination of this chip set and 82371EB is called 440BX.

Peripheral I/O Circuits



(*) The POS K/B controller is located on the MSR board in the optional MSR module.

5-6 Block chart of peripheral I/O circuits

Super I/O (FDC37B807)

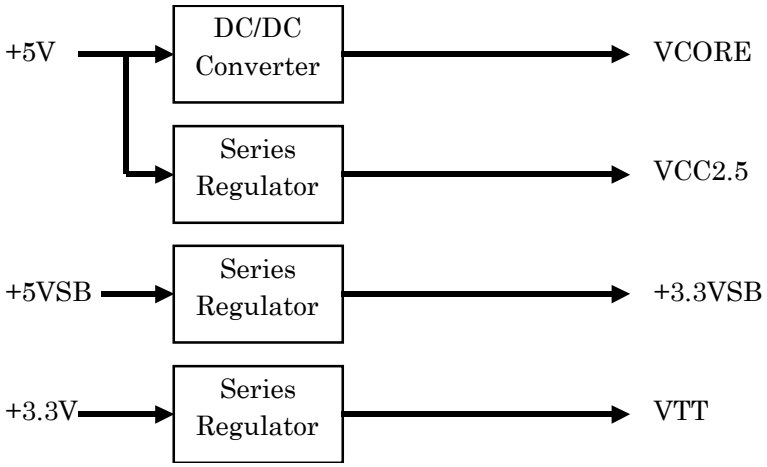
Two SMSC FDC37B807 are used to control the FDD, keyboard / mouse, parallel (1 port) and serial (4 ports). As shown in the block chart of peripheral I/O circuits (page 5-12), one of the SMSC FDC37B807 controls FDD, Keyboard / Mouse, parallel and serial 2 ports, and the other one controls serial 2 ports.

The COM1, COM2 serial ports are used as an external I/F. COM3 can be used as an external I/F when it is not connected to the DRW / external TM / DM-D, although COM3 is allocated for DRW / external TM / DM-D.

IDE device

It is possible to mount 2.5-inch HDD or CompactFlash card on standard primary IDE device and CD-ROM and CompactFalsh card on secondary IDE device.

Power Supply Unit



5-7 The power generated on the motherboard

The power that is provided from the power supply unit on the motherboard generates the various power as shown above in the table 5-8. See “Power Supply Unit” on page 5-25 for more details.

VCORE

This is a core power supply unit for CPU, and is generated by DC / DC converter from +5V. According to the current Celeron (up to 500MHz), VCORE is 2.00V. The jumper setting is not necessary, since it is automatically set when attaching the CPU.

It starts its operation after PS - OK signal from the power supply unit is confirmed.

Output capacity range:	1.80V to 2.05V 0.05V step
Ouput voltage error:	+ / -2%
Electric current output:	Approximately 14A (maximum)
ControlIC:	Linear Technology LTC1753CG 20pin SSOP

VCC2.5

2.5V power supply for the CMOS signal of the CPU. It is generated by the series regulator from +5V.

Electric current output:	500mA (maximum)
Regulator:	Linear Technology LT1086CM

+3.3VSB

It can generate +3.3VSB by the series regulator from +$\overline{5VSB}$ (as long as the main switch of the power supply unit is on, this electric current is flowing although the power is off).

Output electric current: 50mA (maximum)

Regulator: SII S-814A33AMC-BCX

VTT

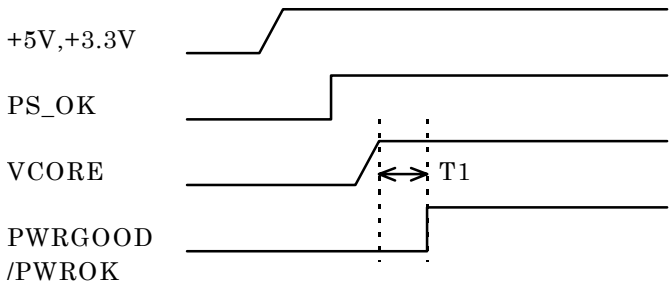
1.5V power supply for the AGTL+ bus of the CPU. It is generated by the series regulator from +3.3V.

Electric current output: 4A (maximum)

Regulator: Linear Technology LT1585CT-1.5

PWRGOOD Signal

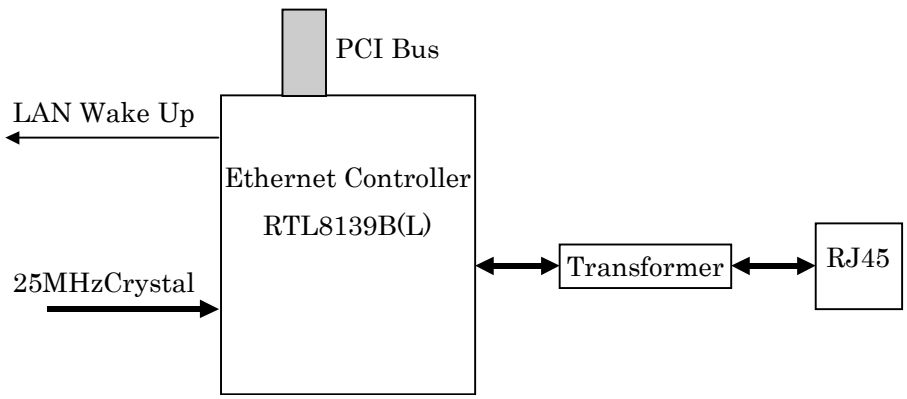
The PWRGOOD (Power Confirmation Signal) signal from the system is activated after the VCORE power is stable. After the activation of the PWRGOOD signal, the system starts its operation.



T1: 1ms (min.) 10ms (Typ.)

5-8 PWRGOOD signal timing

Peripheral Ethernet Controller Circuits



5-9 Block chart of peripheral Ethernet circuits

For the Ethernet controller, the RTL8139B/C(L) for PCI connection is used. Both 10 Mbps and 100 Mbps operation, and wake-up from the LAN is available. Booting program from the network is stored in the optional Flash Memory.

However, while AC power is not provided(including main power switch is off) and the power is off, wake-up is not available. To enable wake-up, it is necessary to enable Wake Up On LAN from the BIOS Setup and to turn on the main power.

This controller can be set from the BIOS setup so that it cannot be used.

Others

Lithium Rechargeable Batteries

The SR-600 is internally equipped with a Vanadium Lithium rechargeable battery(VL2330) which backs up the RTC in the CMOS RAM. This battery, which uses +5V, is recharged when the main power switch is turned on and the system is in operation.

Charging time: 40 hours

Backup time: 200 days (when completely charged)

⚠ *WARNING:*

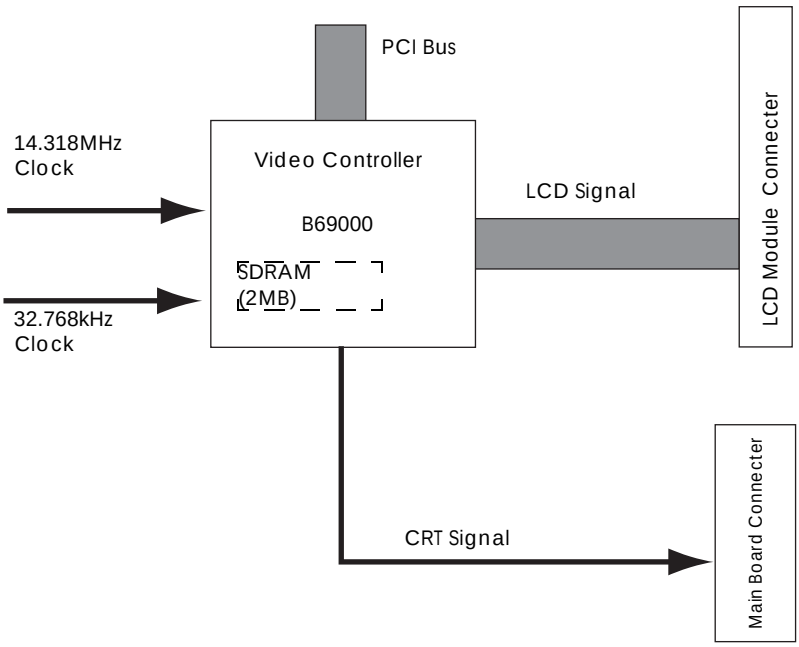
Do not attempt to open, disassemble, deform or put in the fire the Vanadium-Lithium battery, which could result in burns or release of hazardous chemicals.

When you dispose of the Vanadium-Lithium battery, insulate it by wrapping the terminals with tape. Do not mix with other metals or batteries; this may lead to fire, heat, or explosion.

When the Vanadium-Lithium battery is shipped from the factory, it is not fully charged. Therefore, “CMOS chcksum error” message might be displayed when you turn on the main power for the first time. Press the F1 key to set the default value to CMOS.

Multi Video Mode

Peripheral Video Circuits



5-10 Block chart of the peripheral video circuits

The video controller uses the Intel (formerly Chips & Technology) (B) 69000.
It is connected to the PCI bus.

When the Windows 98 / Windows 2000 operation system is used, it is also possible to support Multi Display by generating the output from LCD (or CRT) and video card. Insert video card into the PCI slot to use the Multi Display. However, the LCD and CRT cannot display different screen images if only the SR-600 is in use.

2MB SDRAM is built in the system as a video memory which makes possible the color settings shown in the table below.

Table 5-4 Display devices and the available color settings

Resolutions(dots)	Display device		
	DSTN	TFT	CRT
640 x 480	-	-	16,670,000 colors
800 x 600	16,670,000 colors	256K colors	16,670,000 colors
1024 x 768	-	-	65,000 colors

Note 1) The above table shows the colors that can be set. The number of colors that can actually be displayed is restricted by the available display colors for each LCD unit.

PCI Board

PCI Slot

The PCI bus signal from the motherboard is directly connected to the PCI slot through the PCI board. Refer to Table 10, “Assignment of PCI slot signalsM,” on page 12 for the pin assignments.

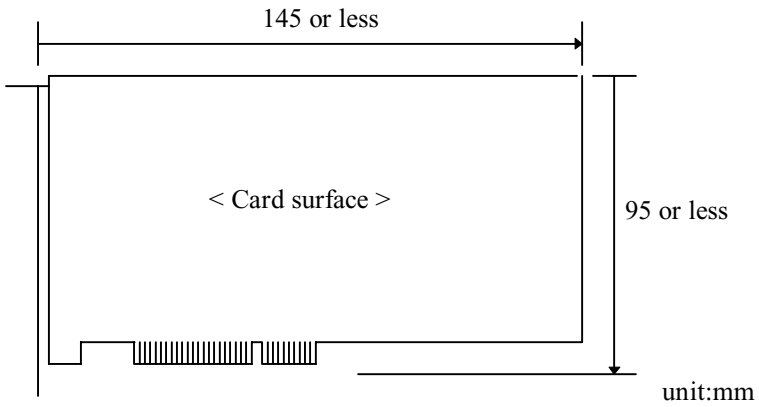
IDSEL

- Slot #1: AD26

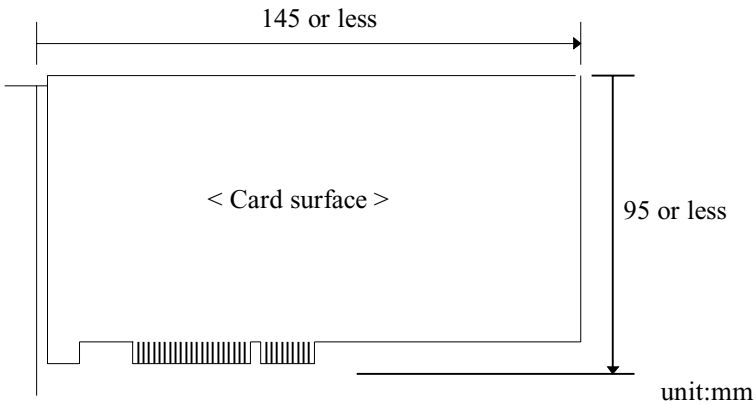
❑ +3.3V / +5V / +/-12V power supply

❑ PCI card size that can be mounted

The PCI card that fit within the range shown below can be mounted.
However, the PCI card size shown below fits when the under frame under the main cover is removed. The card size, that can be mounted from the access point located to the side of the SR-600, is smaller than the size shown below.



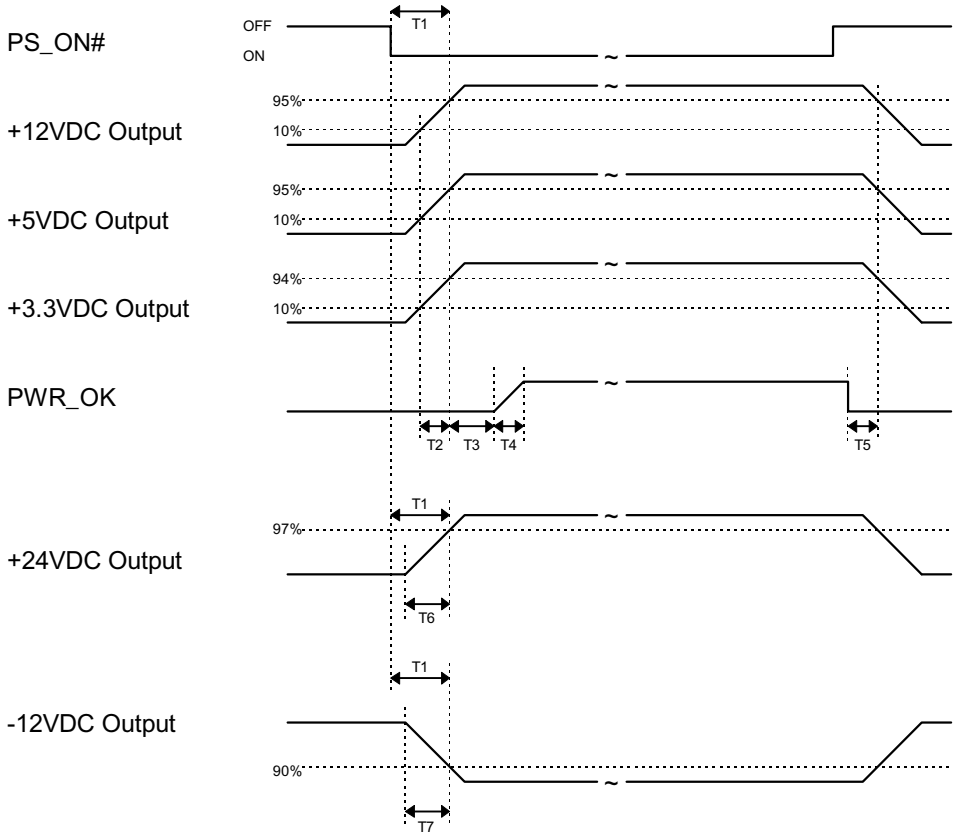
5-11 Mountable (when under frame is remved) PCI card size



5-12 PCI card size that is inserted from the side of SR-600

Power Supply Unit

Sequences



5-13 Power supply unit sequences

T1 (power on time)	max. 500ms
T2 (+12V,+5V,+3,.3V start up time)	0.1ms ~ 70ms
T3 (PWR_OK delay time)	100ms ~ 500ms
T4 (PWR_OK start up time)	max. 10ms
T5 (Power down warning)	min. 1ms
T6 (+24V start up time)	min. 70ms (loading capacity 6800µF)
T7 (-12V start up time)	max. 70ms (loading capacity 350µF)

Protection Circuit/Unit

- ❏ Short circuit protection (*1)
  Shuts down when the output terminal (output power supply) is short circuited.

- ❏ Over-voltage protection (*1)
  Protection circuit to prevent the output terminals from exceeding the rated voltage.

- ❏ Overheating protection (*1)
  Shuts down when abnormal heat is detected in the power supply elements.

- ❏ Input power fuse
  Shuts down the system when the input current exceeds existing values.
  Because this may indicate a defect within the power supply, the entire power supply unit must be replaced when the fuse blows.

  *1: Unplug the AC cord ot turn off the main power switch if power shuts down from these protection operation. Turn off the power for a certain period of time (approximately 1 minute), then plug the AC cord or turn on the main power to reboot.

Others

The main power fun is changeable when the unit case is removed.

Electrical capacitance to the external devices

The table shown below shows the total electrical capacitance that can be provided to the devices that receive their power supply from the board inserted to PCI slot, COM ports 1 and 2, the keyboard, mouse, and the USB port. Make sure that the electrical current consumed does not exceed the total capacitance listed in the table below for the +5V, +3.3V, +12V, -12V, and +24V voltages.

Table 5-5 External Electrical Capacitance

Power supply	Application	Total capacitance
+5VDC	PCI slot, COM port, keyboard, USB, FDD	2.8A
+3.3VDC	PCI slot	0.5A
+12VDC	PCI slot, DMD	0.7A
-12VDC	PCI slot	0.25A
+24VDC	Drawer	0.5A, peak at 2.0A

Each of these ports is restricted to the capacitance limits shown below.

Table 5-6 Electrical Capacitance of Each Port

Port	Power	Supply capacity	Remarks
COM port	+5VDC	400mA each	+5VDC The total for all 5 ports must not exceed 2.8A.
USB port	+5VDC	500mA each	
keyboard	+5VDC	500mA	
PCI slot	+5VDC	1A	
FDD	+5VDC	500mA	
PCI slot	+12VDC	500mA	+12VDC The total for 2 ports must not exceed 700mA.
DMD	+12VDC	600mA	

FDD

The external 3.5-inch FDD (optional), which makes it possible to read and write 1.44MB / 720KB in floppy disks, can be connected to the SR-600.

HDD

A 2.5-inch ATA interface HDD can be installed in the SR-600. The specification is explained below.

Interface: ATA (Primary)

Transfer mode: PIO Mode4, Ultra DMA Mode2 33MB (not compliant with 66MHz)

Size: 2.5-inch (9.5mm) maximum height

HDD Capacity Limit

The HDD capacity has the following limits (upper limits) including BIOS and OS explained below.

1. BIOS upper limit : 137.4 GB
   Addressing is capable up to 137.4 GB(228 x 512byte / sector) by applying the LBA addressing method.

2. OS capacity limit
   The following limit is applied according to its format type.

- NTFS (WindowsNT4.0)
  Theoretically maximum partition size 16EB(16x1024x1024GB)
  Boot partition size 4GB
  ServicePack3 applied, recognizable maximum size 8GB

HDD Jumper Setting

2.5-inch HDD is used only as Master, therefore the jumper setting is not necessary.

CD-ROM Drive(Optional)

Interface: ATAPI (Primary)

Transfer mode: PIO Mode4, Single word DMA Mode2, Multi word DMA Mode2

Readable media: CD-ROM (mode1, mode2), CD-ROM XA (mode2 form1,form2), :CD-DA, Photo CD, CD-I (mode2 form1,form2), CD-I Ready, CD-I Bridge, CD-WO, Video CD, Enhanced Music CD (CD Plus), CD-RW

Media size: 12cm or 8cm

Size: 128(W) x 127(D) x 12.7(H) mm

Power: single +5V

Reading: 650mA, seek / Spin-up: 750mA, peak : 1500mA

Weight: 245g (typ.) Drive only

Manufacture: EPSON

Model number: OI-S02

- CD-ROM drive is connected to the Primary IDE, and operates as Slave Drive.
- It cannot play music CD.

CompactFlash Card(Optional or Specified Product)

It is possible to use a CompactFlash card mounted in SR-600 as a substitute for a HDD or CD-ROM. The compact flash card is directly connected to the Primary IDE bus and operates in the mode called True IDE mode. When the compact flash card is mounted as a substitute for a HDD, it operates as a Master Drive. When compact flash card is mounted as a substitute for a CD-ROM, it operates as a Slave Drive. Either Type I(3.3mm height) or Type II(5mm height) card can be used. In addition, the power is +3.3V.

The CompactFlash Association, which establishes the CompactFlash standard, establishes two specifications. Also, two power level is defined in the CF+ card. Level0 is same as the CompactFlash standard. Level1 is defined that the maximum electric current is 500mA although the power supply is 3.3V or 5V. Although the Host side is not required to support Level1, it does not creat a problem if 500mA electric current flows in the SR-600.

Table 5-7 The differences of Compact Flash and CF+

	Operation mode			Maximum electric current		
	PC Card Memory code	PC Card I/O mode	True IDE mode		+5V	+3.3V
Compact Flash	O	O	O		100mA	75mA

Table 5-7 The differences of Compact Flash and CF+

	Operation mode			Maximum electric current		
	PC Card Memory code	PC Card I/O mode	True IDE mode		+5V	+3.3V
+CF	O	O	Option	Level0	same as above	same as above
				Level1	500mA	500mA

You can not remove the card that is in operation (see the notes). Turn off the main power to insert or remove the card.

Also, the top side must be up when inserting the card.

The compact flash card can be used as “Hard Total” in OPOS.

In addition, contact your dealer about the suitable (operation is guaranteed) cards.

Note 1) The compact flash card operating in the True IDE mode is not recognized if it is removed while the main power is on. Also, the SR-600 does not support the power and a signal while removing the card; therefore, it might result in crashing the contents of the card.

Note 2) CF card is mounted on the dedicated conversion circuit board. Two types of CF card is available. One is to attach the card as a Master in HDD space, another one is as a Slave in CD-ROM space.

LCD/Keyboard unit

General Specifications

The specifications of the DM-LR121T(TFT) and DM-LR121S(DSTN) are shown below.

TFT

Table 5-8 TFT LCD unit descriptions

Item		Descriptions
LCD	Size	12.1-inch size
	Type	Color TFT
	Resolution	800 x 600 dots
	Color	Approximately 16,770,000 color
Back light	Number of tube	2 light type
	Brightness	350 cd/m^2 typ. (Touch panel not included) 290 cd/m^2 typ. (Touch panel included)
Touch panel	Method	Film resistence method (Finger input is available)
	Surface hardness	Above 2H (JIS K-5400)
	Position accuracy	+/- 5 mm
External interface		MSR (product code undefined) for connectionx 1
Indicator		POWER LED, HDD LED
Power		+3.3V, +5V, +12V
Case color		EPSON dark gray, EPSON cool white
Others		Connected to SR-600 with dedicated cable Contrast adjustment is available

DSTN

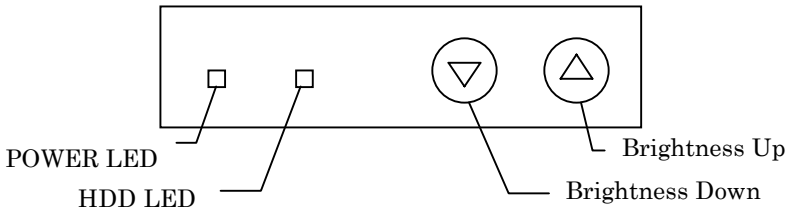
Table 5-9 DSTN LCD unit descriptions

Item		Descriptions
LCD	Size	12.1-inch size
	Type	Color DSTN
	Resolution	800 x 600 dots
	Display color	4096 colors (16,000,000 color is available with CT69000 TMED function)
Back light	Number of tubes	2 lights type
	Brightness	180 cd/m^2 typ. (Touch panel not included) 150 cd/m^2 typ. (Touch panel included)
Touch panel	Method	Film resistance method (Finger input is available)
	Surface hardness	Above 2H (JIS K-5400)
	Position accuracy	+/- 5 mm
External interface		MSR (product code undefined) for connection x 1
Indicator		POWER LED, HDD LED
Power		+3.3V, +5V, +12V
Case color		EPSON dark gray, EPSON cool white

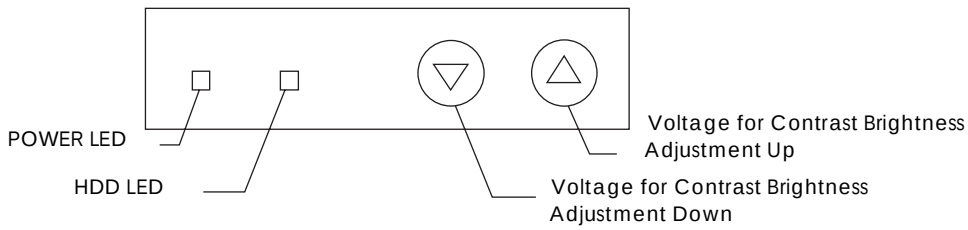
Table 5-9 DSTN LCD unit descriptions

Others	Connected to SR-600 with dedicated cable Contrast adjustment is available

POWER LED (green and red color photogenic), HDD LED (green), and push switchs for brightness adjustment(TFT) and for contrast adjustment(DSTN) are mounted. The LED and switch setting is shown in the table below.



5-14 TFT unit switch panel



5-15 DSTN unit switch panel

Back light brightness adjustment (TFT)

The brightness setting is saved although the main power is off.

Contrast Adjustment (DSTN)

DSTN LCD contrast is adjusted using two switches for the contrast adjustment which adjust the contrast to its maximum. Pressing the voltage Down switch for the contrast adjustment on the right side of the switch panel makes the entire LCD screen lighter and pressing the voltage Up switch for the contrast adjustment on the left side makes entire LCD screen darker.

The brightness setting is saved although the main power is off.

POWER LED Adjustment

Table 5-10 LED control signal and displayed color

Operation status	POWER LEDstatus Displayed color
Normal operation	Green
Power on suspend	Orange
Power off	Off

Chapter 6
Peripherals/Option Installation

Optional peripherals and equipments are explained in this chapter.

❑ Option

- LCD Unit (See 6-2)
- CD-ROM Drive (See 6-14)
- Drawer/CRT Board (See 6-17)
- Compact Flash Slot (See 6-23)
- MSR Unit (See 6-27)
- DM-D Unit (See 6-44)
- Floppy Disk Drive (See 6-45)
- DIMM (See 6-46)

Confidential

LCD Unit

Descriptions

DM-LS121T and DM-LS121S configure the input and output of SR, and are mounted in SR-600.

- ❑ 12.1-inch Color TFT LCD is used for DM-LS121T and the 800 x 600 dots resoluton display is available.
- ❑ 12.1-inch Color DSTN LCD is used for DM-LS121S and the 800 x 600 dots resolution display is available.
- ❑ 350 cd / m2(Touch Panel not included) high brightness backlight is used (DM-LS121T).
- ❑ Contrast adjustment is available(DM-LS121S).
- ❑ Film resistence method touch panel is used and the touch input is available.
- ❑ Water proofed I style-equivalent
- ❑ MSR Unit (IEC xxxx or DM-MS123) can be connected

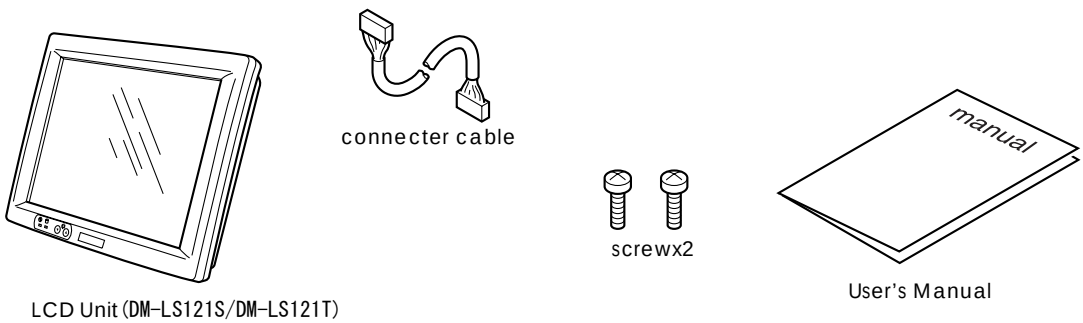
The software listed below is available:

Touch Panel Driver: Each OS (For MS-DOS, Windows95 / 98, WindowsNT, and Windows2000)

Video Driver: For WindowsNT

Supplied Items

Check that the items shown below is contained and none of the items are damaged.



6-1 Supplied Items with LCD Unit

Basic Specifications

Figure 6-1 TFT/DSTN LCD Unit Specifications List

Item		Specifications	
		TFT	DSTN
LCD	Size	12.1-inch type	12.1-inch type
	Type	Color TFT	Color DSTN
	Resolution	800 x 600 dots	800 x 600 dots
	Color	260,000(256K) color	Approximately 16,770,000 colors
Backlight	Number of tube	2 lights type	2 ligts type
	Brightness	350 cd/m^2 typ. (Touch panel not included) 290 cd/m^2 typ. (Touch panel included)	180 cd/m^2 typ. (Touch panel not included) 150 cd/m^2 typ. (Touch panel included)
Touch Panel	Method	Film resistence method(Finger input is available)	Film resistence method(Finger input is available)
	Surface hardness	Above 2H (JIS K-5400)	Above 2H (JIS K-5400)
	Position accuracy	+/− 5 mm	+/− 5 mm
External Interface		MSR(**DM-MR112, DM-MS123**)for connection x 1	MSR(**DM-MR112, DM-MS123**)for connection x 1
Indicator		POWER LED, HDD LED	POWER LED, HDD LED
Power Supply		+3.3V, +5V, +12V	+3.3V, +5V, +12V
Case Color		EPSON dark gray, EPSON cool white	EPSON dark gray, EPSON cool white
Others		Connected to SR-600 with dedicated cable. Contrast adjustment is available.	Connected to SR-600 with dedicated cable. Contrast adjustment is available.

Environmental Specifications

1. Temperature

   During operation:5 to 35 Celsius

   During saving:-10 to 50 Celsius

2. Humidity

   During operation:30 to 80 %RH (no condensation)

   During saving:30 to 90 %RH (no condensation)

3. Water resistant

   JIS C 0920 water proofed I type(IEC 529 IPX1) equivalent

Life and Durability

1. Life of cold cathod tube for back light (Unless the brightness is reduced in half)

   TFT 40,000 hour or above (25 +/-5 Celsius)

   DSTN 25,000 hour or above (25 +/-5 Celsius)

   Cold cathod tube can be replaced.

2. Touch panel durability

   (1) Finger input durability:10,000,000 or above

   Condition:Press one point under the following conditions. Silicon rubber (front edge R8, hardness 60), input pressure 1.96N{200gf}, and input cycle 5Hz.

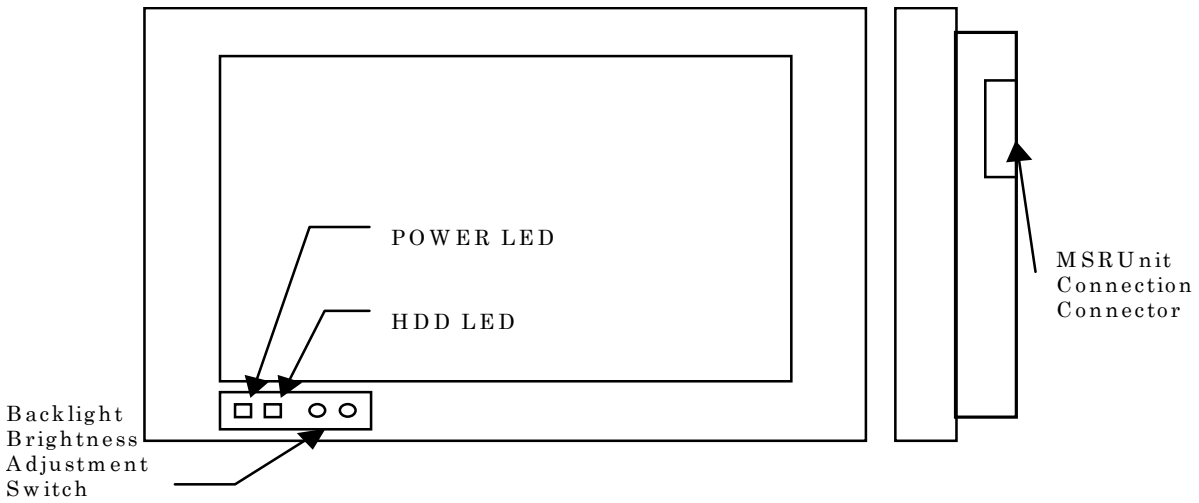
   (2)Writing durability:1,000,000 characters or above

   Conditions:Continuouslly write the 7.5 x 6.75 mm size numeric characters in the area of 10 x 9 mm Polyolefine resin (front edge R0.8) with writing pressure 3.43N{350gf}.

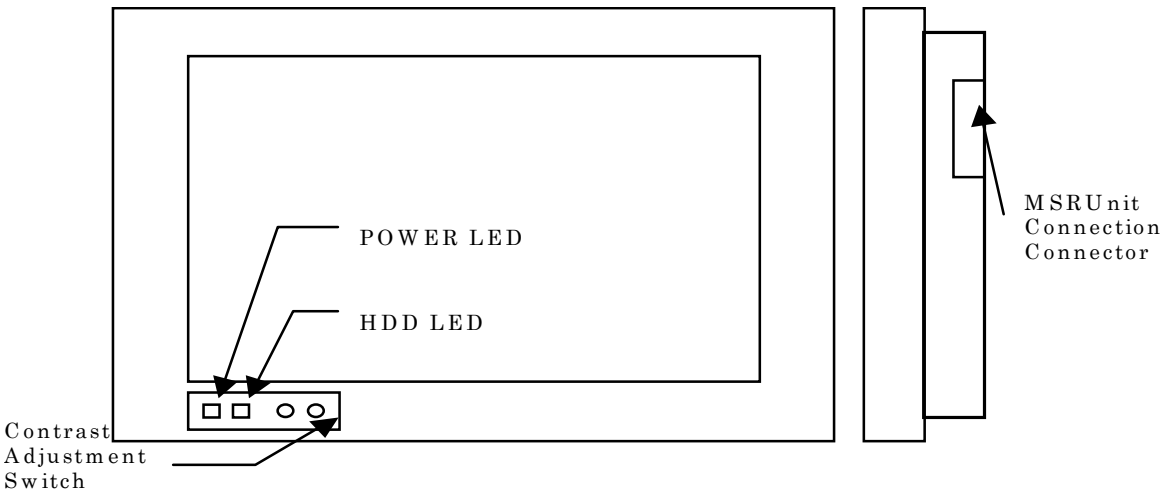
Structure

1. Unit Structure

The figure below shows the external structure of DM-LS121S and DM-LS121S.



6-2 Unit Structure(TFT)



6-3 Unit Structure(DSTN)

2. Indicator

POWER LED and HDD LED is placed on the front side of this unit.

Figure 6-2 LED type and meaning

LED	Color	Meaning of the light
POWER	Green	Power ON (Normal operation)
	Orangef	Power ON Suspend
	Off	Power OFF
HDD	Green	Accessed
	Off	Not accessed

3. Backlight adjustment switch(TFT)

The switch which adjust the LCD backlight brightness is on the left corner of this unit. Decrease the brightness pressing the left switch and increase the brightness pressing the right switch. If you kept pressing the switch, it changes the brightness continuouslly. The new brightness setting is saved even if you turn off the power.

4. Contrust adjustment switch(DSTN)

The switch which adjust the LCD contrust is on the left corner of this unit. If you kept pressing the switch, it changes the brightness continuouslly. The new brightness setting is saved even if you turn off the power.

5. MSR Unit Connection Connector

MSR unit (DM-MS123 / DM-MS112) can be connected to the connector located on the right side of the unit. When you connect the MSR unit, remove the connector cover and stabilize it with screw. When MSR is not connected, attach the cover on it.

(Note)Be sure to turn off the SR-600 main power to remove or attach MSR.

6. Base unit connection cable

The dedicated cable to connect SR-600 is attached.

Note:

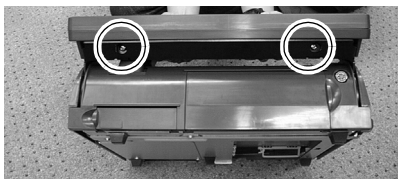
- ❏ Bright spot or dark spot can be found on the part of the LCD unit. Also, sometimes brightness and color are displayed irregularly but these are not the problems of LCD.
- ❏ Use it within the specification standard. Never use is in the high temperature and humidity, and avoid the condensation.
  If this product is not used within the specification standard, it may result in the shorten its life, deterioration of display quality, and the damege of the product.
- ❏ Do not drop or subject this product to strong impact. It may result in the damage of this product.
- ❏ Clean the surface of the touch panel with dry and soft fabric or the fabric with isopropyl alchol.
- ❏ Do not touch the touch panel with hard or pointed device.
- ❏ Do not press the surface of touch panel. It may cause color shading or irrelevant LCD display.
- ❏ Do not place or closely contact objects on the LCD monitor. Doing so may result in leaving a stain on the monitor.

Installing a LCD Unit

Follow the steps below to install the LCD unit.

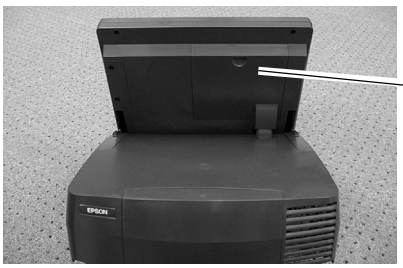
1. Install the LCD unit on the LCD unit frame by sliding it to the frame.

2. Fix the bottom part of the LCD with two screws.



3. Attach the connecter.

4. Attach the cover.



Installation is completed.

Touch Panel Driver

Touch Panel Driver is a Mouse Emulater Driver which enables to operate the same operation as mouse does by switching with the Serial Mouse Driver. This driver converts the absolute coordinate data recived by touch panel driver via RS232C into a mouse equivalent coordinate data, and inform it to the system. The application recognizes coordinate data input from the touch panel device as a mouse data and performs its operation.

MS-DOS

Touch panel driver is not installed when this unit is shipped. Simple Batch File for copying is available. Copy it from the backup directory to use. Move the Batch File to "C:\BACKUP\TOUCH" and type the command written below to start installation.

INSTALL C:\TOUCH[Enter]

The directory where the file is copying to can be specified to the parameter as an option, and also can be omitted. If it is omitted, the file is copied to “C:\TOUCH". It automatically copies the file and completes the copying of file.

Type the command written below on the prompt to install the driver.

MEDVSTD I10,P2E8,B96[Enter]

Parameter “I10" specifies IRQ 10, “P2E8" specifies I/O address 2E8h, and “B96" specifies Baud Rate 9600.

Windows 95/98, Windows NT

Follow the steps below.

1. Start C:\BACKUP\VIDEO\W95500.EXE.
2. Welcome Screen is displayed.Welcome. Clock on [Next]button.
3. Software License Agreement Screen is displayed. Click on [Yes]button, only if you agree on the agreement. Copying of file is executed.
4. The Setup Complete Screen is displayed when the copy is completed. Select "Yes, I want to restart .....:” , then click on [Finish] button.
5. It reboots the system. Change the settings from the [Control Panel:Display Properties:Settings Tab] if it’s necessary.

Calibration

The calibration modifies the touch panel pressed position and the system coordinate to be matched.

MS-DOS

Follow the steps below for the calibration.

1. Move to the touch panel directory.
2. Type FPCAL[Enter]. Calibration utility starts.
3. Click on the points on the [+] character. The [+] character is displayed sequentially in nine places on the screen. (Top : left/middle/right, Middle : left/middle/right, Low : left/middle/right)
4. It automatically exits the utility when the procedure is completed.

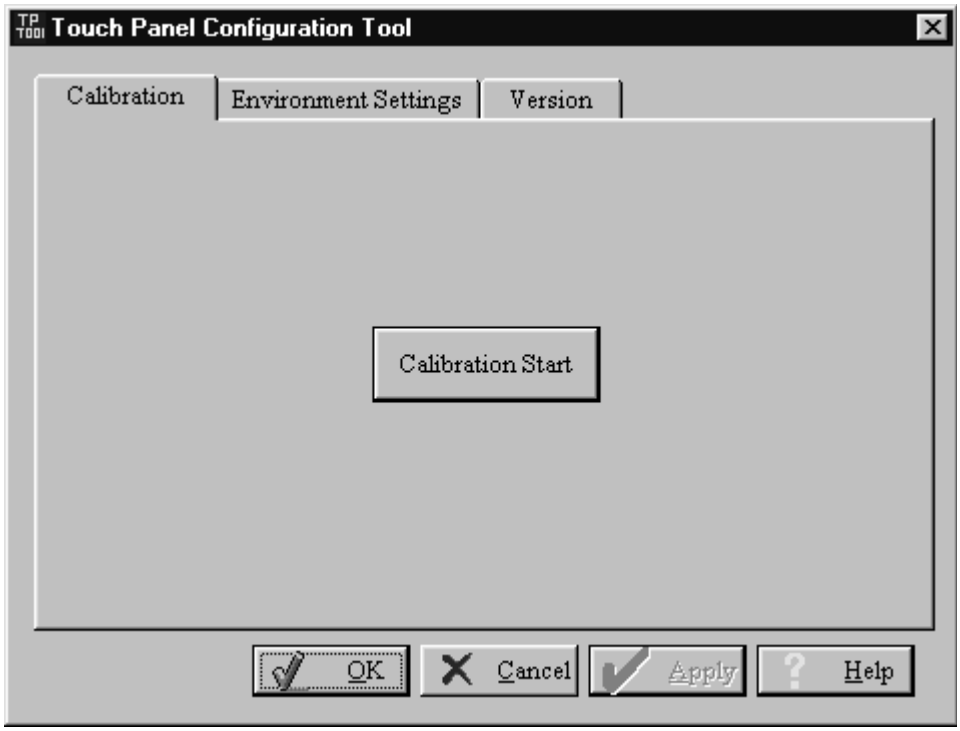
Windows 95/98, Windows NT

Environmental Setting Tool Setup

Execute the calibration from the environmental setting tool in Windows95/98 andWindowsNT. Start the Touch Panel Environmental Setting from the execution file (EpsTpCal.exe).

Click on “Start” from the Windows. Select “programs”-”EPSON Touch Panel”-”Touch Panel Configuration Tool” and run the program.

The Window shown below appears when the environmental setting tool starts.



6-4 Environmental setting tool

[Calibration Start button]
It starts the coordinate modification. Display the Coordinate Modification screen when the button is clicked.

[OK button]
Exits the touch panel environmental setting when the button is clicked.

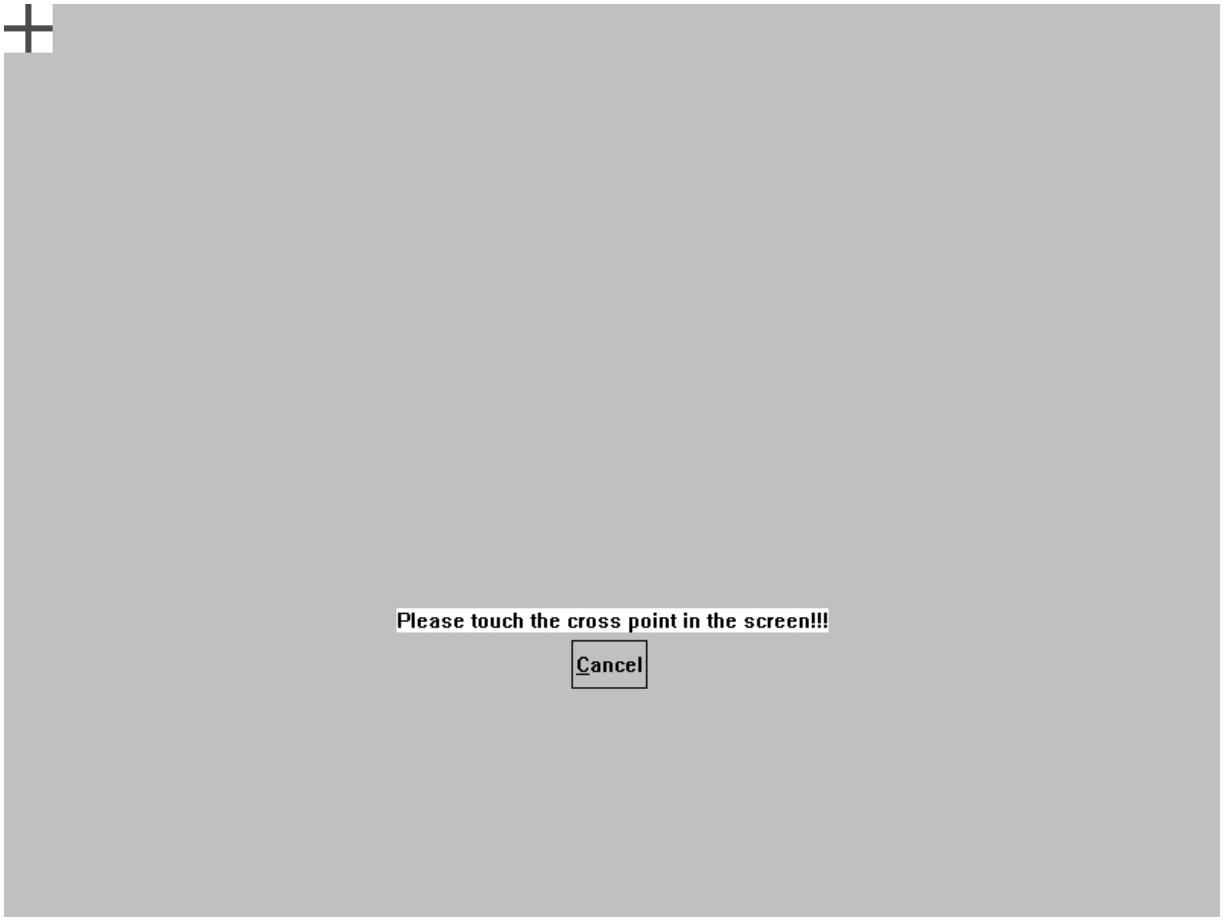
[Cancel button]
It cancel the setting. Exits the touch panel environmental setting when the button is clicked.

[Apply button]
It is effective only if the default value of touch panel environmental setting tool is changed. Default is not available.

[Help button]
It displays Help window when clicked.

Calibration

It modifies the cordinate position by clicking on the modification standard position. During the modification, it outputs the tap sounds regardles of click sound On/Off setting. Also, cursor is not displayed. It prepares that tap operation can be normally performed during IME mode.



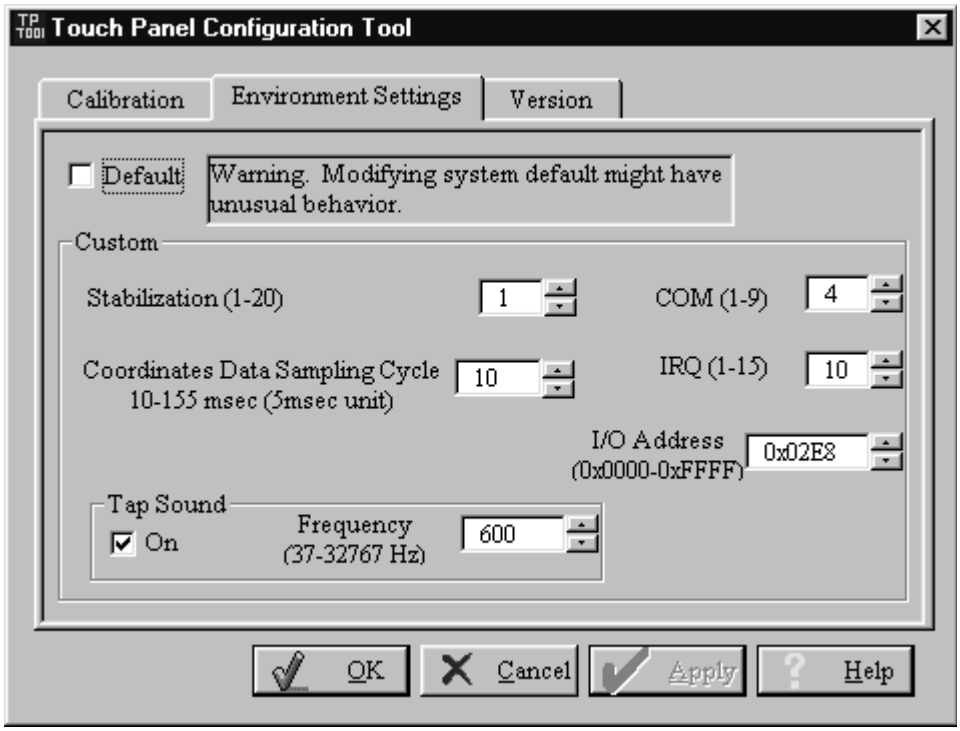
6-5 Calibration Screen

[Modification point "+"]
The [+] character is displayed sequentially in nine places on the coordinate position. By clicking on the [+] point, the coordinate is recognized. If the points other than [+] point, it is ignored. When all the point 1 to 9 (click 1 to 9 is a must), it exits the coordinate modification screem and display the calibration screen. The point is displayed by one point in order by which the pointe is clicked. Screen is displayed in full screen.

[Cancel buton]
It cancels the setting. Exits the coordinate modification and display the calibration screen when it's clicked.

Operation Setting

The items listed below can set fron the operation setting screen. When “Default” is checked, the setting items in the “Custom” is displayed in gray color and cannot make any change. Remove the check from the “Default” to change the setting of items. When the check is removed from the “Default”, the warning message “It may cause some errors in the system operation” appears.



6-6 Operation Setting (during screen setting)

[Default]
Check the “Default” radio box to set the Default value. Remove the check to change the setting. If the check is removed and no change is made, the setting remains default setting. If you check on the Default, the initial value is set for each items.

[Stabilization]
Enter a Jitter offset. Select the value using Up / Down button to set a new value. The setting value is from 1 to 20 (Default:1).

[Frequency]
Enter Data Sampling Coordination interval. Select the value using Up / Down buton to set a new value. The setting value is from 10 to 155msec in 5msec (Default:10).

[COM]
Set the COM Port. Select the setting value from the combo box to set a new value. The setting value is from 1 to 9 (Default:4).

[IRQ]
Set the IRQ. Select the setting value from the combo box to set a new value. The setting value is from 1 to 15 (Default:10).

[I/O Address]
Set the I/O Address. Select the setting value from the combo box to set a new value. The setting value is from 0x0000 to 0xFFFF (Default:0x02E8).

[On]
Set the Beep sound during tapping. Check the check box to beep. Remove the check from the check box not to beep(Default:ON).

[Frequency]
Set the Tab Sound (Beep Sound) frequency. Select the value using Up/Down buton to set a new value. The frequency is from 37 to 32767Hz (unit:1Hz) (Default:600).

[OK button]
It enables a new setting.

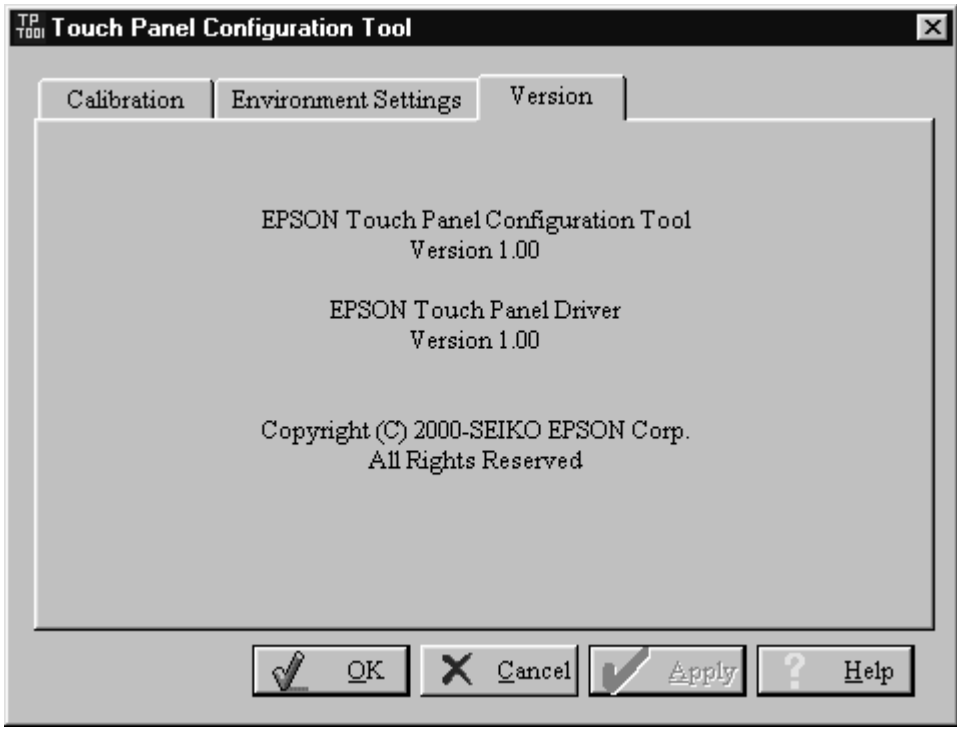
[Cancel button]
It cancels a new setting.

[Apply button]
It is enabled only if the setting value of the Touch Panel Environmental Setting is changed.

[Help button]
It displays a Help Window when this button is clicked.

Version Information

It displays a Version infromation.



6-7 Version Information

[OK button]
It enables a new setting.

[Cancel button]
It cancels a new setting.

[Apply button]
It is enabled only if the setting value of the Touch Panel Environmental Setting is changed.

[Help button]
It displays a Help Window when this button is clicked.

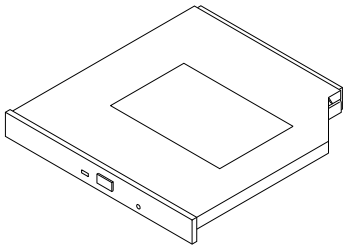
CD-ROM Drive

Description

A thin-model Drive for notebook-size PC is used for the CD-ROM Drive.

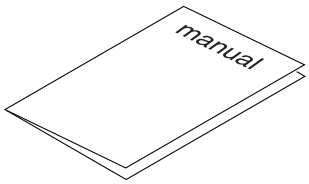
Supplied Items

Check that the items shown below is contained. Refer the developer's guide for the attachment guideline.



CD-ROM Drive

Screw (4)



User's Manual

⚠ WARNING:

Never disassemble or remove the cover of this product.
Doing so may result in injury, or fire.

Do not allow foreign objects to fall into this product.
Penetration by foreign objects may lead to fire.

Do not spill water or get it wet.
It may lead to fire.

Turn off the power if it produces smoke, a strange odor, or unusual noise.
It may lead to injury, or fire.

⚠ CAUTION:

Do not insert fingers or alien matter into CD-ROM disk tray or openings.
It may lead to injury.

Do not hold SR-600 with disk tray or front panel.
It may cause injury.

Pay attention to handling the package not to cut your finger with the edge of it.
It may lead to injury cutting your finger with the edge of the paper.

Do not adjsut the LCD angle, when CD-ROM drive disk tray is pulled.
Doing so may result in damage of the disk tray.

Specification

❑ General Specification

Interface: ATAPI(Primary)

Media Size: 12cm or 8cm

Power Supply: +5V Single

Environmental Specification :Based on the SR-600 environmental specification

❑ Dimensions and Weight

Dimensions(width) x (length) x (height):128mm x 127mm x 12.7mm

Weight: 245g

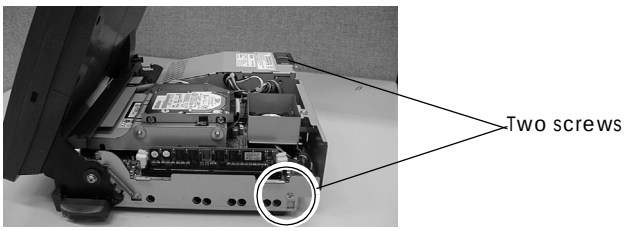
Installing a CD-ROM Drive

Follow the steps below to install the CD-ROM Drive.

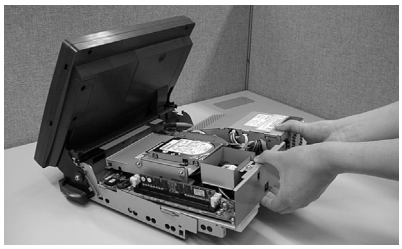
1. Remove two screw on the lower right and left corner of the unit's rear side.

2. Hold the tab on the lower right and left corner of the unit and remove the main cover by sliding downward.

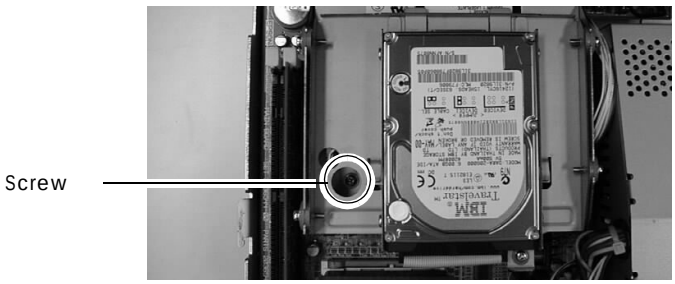
3. Remove two screws on the left ant right of the unit.



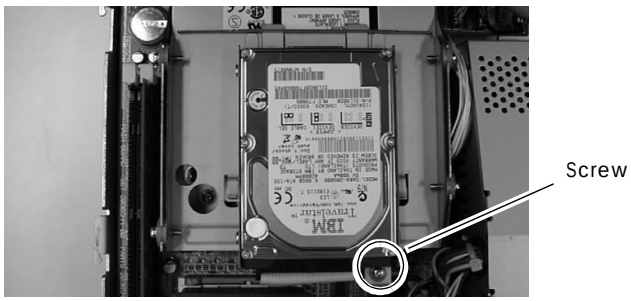
4. Slide a motherboard to backward.



5. Remove a screw which fastens a CD-ROM Drive metal case on a motherboard.
   A CD-ROM Drive metal case and a HD Drive is removed.



6. Remove a screw that fixes HS Drive on CD-ROM Drive metal case.
   CD-ROM Drive metal case and HD Drive are disassembled.



7. Place a CD-ROM drive on a CD-ROM Drive metal case.

8. Fix right and left corner of the metal case with two screws.

Installation is completed.

Drawer /CRT Board

Specifications

Model name: OI-B08

OI-B08 is a optional board for SR-600. Drawer contol ia available by equipping it to SR-600.

It is mounted a microchip computer and drawer control is operated by interpreting the ESC / POS code.

When installing this board to the system, select MODE from the BIOS Setup screen. CRT display function is valid regardless if its MODE.

The connector for CRT is placed on this board, and it provides CRT display function for SR-600. Select MODE from the BIOS setup screen to enable operation with this board attached.

Figure 6-3 General Specifications

Items	Specifications
Drawer Kcikboard Connector	2 connectors are mounted (Same as connecting Y cable to the TM Printer drawer connector) The signal for drawer kickboard is connected to no. 2 pin
Connection drawer	24V 24Ω or above solenoid is used
CRT connector	D-sub 15 pin

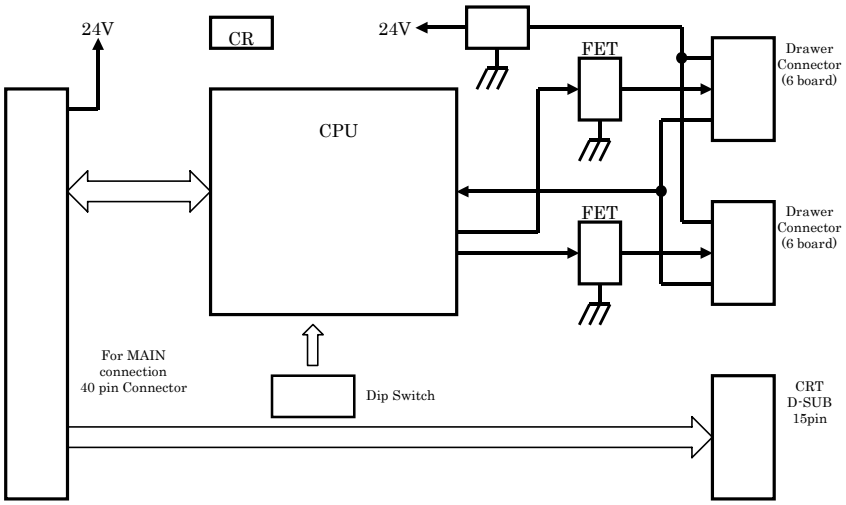
⚠ CAUTION:

Please make sure that the same type of Drawer and CRT Board is used to connect the Drawer and CRT Board both.

Connect the drawer which use same Drawer Open Status (High/Low).

Set the same transfer rate as DM-D to connect with the DM-D simultaneously.

Block Chart



6-8 Drawr /CRT Board Block Chart

Drawer Board DIPSW Setting

DIPSW	No.	Meaning	Default setting
SW1	1	Drawer/CRT board operation mode selection SW2 SW1 OFF OFF Emulation mode 1 OFF ON Emulation mode 2 ON OFF Native mode	OFF
	2		ON
	3	Parity selection OFF Not available ON Available(Even number parity)	OFF
	4	Data Bits length OFF DTR/DSR ON XON/XOFF	OFF
SW2	1	Hand Shake OFF DTR/DSR ON XON/XOFF	OFF
	2	Drawer Open signal logic OFF 1 or 2 Open Drawer connected at L 1 Open Drawer connected at H ON 2 Open Drawer connected at H	OFF
	3	Baud Rate selection SW4 SW3 OFF OFF 9600bps OFF ON 19200bps ON OFF 38400bps ON ON 115200bps	OFF
	4		OFF

Note) Bacchus' drawer board carries two connecters (PortA, port B) for the drawer connection and the control for each connectors is available from ESC/POS Command. When the drawer is open, the status response differs depending on the type of operation mode which can be switched by the dip switch on the board.
Drawer Kick Method (available in all Modes)
ESC/POS Command
at ESC p m
when m = 0 or 30H: Port A
when m = 1 or 31H: Port B
at DEL DC4 1
when m = 0: Port A
when m = 1: Port B
Kick Pulse is output at no. 2 pin under the condition listed above.
If one of the system is Open, the drawer open status returns 'Open' status during the Emulation Mode or two drawers are connected. The separate status cannot be determined.

Interface for the drawer

❑ Specifications

The solenoid 24V(2A at the peak time) pulse by two drawer control (same as supporting the two drawer to the TM drawer connector at Y cable) FET. Refere to the picture shown in the table below (from the SR-600 power supply specifications) for the details. 24V output is 2.2A at peak time. 24V output current is allowed up to two pulse shown below.

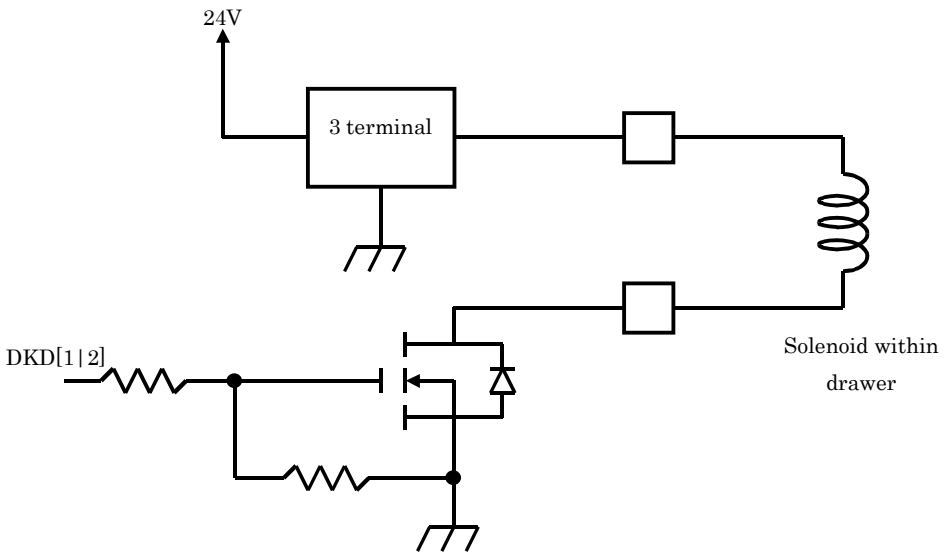
Two drawer controls (for example,supporting two drawer at Y cable for TM drawer connector)is available, but the drawer open status does not distinguish the two drawer controls at emulation mode.

⚠ *CAUTION:*

It is recommended to use 24Ω or above Solenoid for drawer.

❑ Drawer setting Circuit Description

24V / 1A or above electric current is required for the drawer open. FET is used for the booting since it cannot be started from the CPU port. Refer the table below for the detail.



Connector Specifications

MAIN Board Connector

The connector connected with main board is 40 pin.

Figure 6-4 Connctor pin assignments

Pin No.	Signal name	Pin No.	Signal name
A1	Reserved	B1	RESETP
A2	Reserved	B2	GND
A3	DTR (|)	B3	RED (|)
A4	TXD (|)	B4	GND
A5	RTS (|)	B5	GREEN (|)
A6	RXD (O)	B6	GND
A7	DSR (O)	B7	BLUE (|)
A8	GND	B8	GND
A9	MODE (I)	B9	HSYNC
A10	GND	B10	GND
A11	GND	B11	VSYNC
A12	+12V	B12	GND
A13	+12V	B13	DDCCLK
A14	+12V	B14	GND
A15	+12V	B15	DDCDATA
A16	GND	B16	GND
A17	GND	B17	+5V
A18	GND	B18	+5V
A19	GND	B19	GND
A20	GND	B20	GND

Note) Signal name is recognized only by the host. (I/O) is a direction seen from the board side.

Connector for Drawer Board

Two connectors are mounted for the drawer connection.

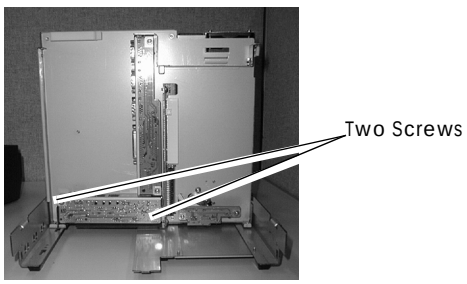
Figure 6-5 Connector Pin Assignments (DKD Connector Port for both A and B)

Pin No.	Signal name
1	GND
2	DKD1
3	DKSENSE
4	DK24V
5	Reserved
6	GND

Installing a Drawer/CRT Board

Follow the steps below to install Drawer/CRT board.

1. Remove the Main cover. (See table 6-15)
2. Slide the motherboard backward. (See table 6-16)
3. Set the motherboard against the wall, then fix it with two screws on the Drawer/CRT board.



Installation is completed.

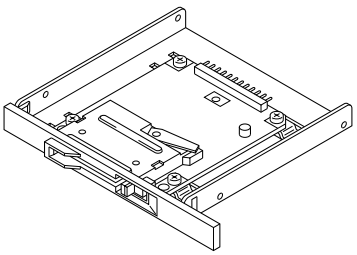
Compact Flash Slot

Description

SR-600 contains two types of compact flash slot. OI-S03-012 that can be mounted on CD-ROM space and OI-S03-022 that can be mounted on HDD space.

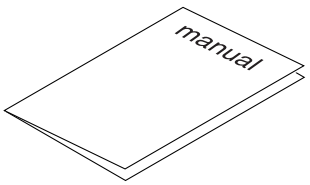
Accompanying Software

OI-S03-012



Front Compact Flash Slot

Screw X4



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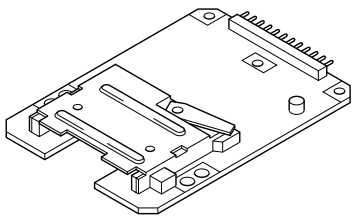
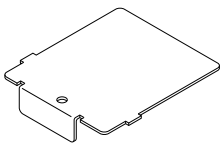
OI-S03-022

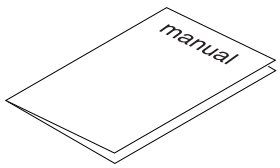


Inside Compact Flash Slot



Insulation sheet

Screw x1



1user's Manual (this document)

Specifications

Dimensions and Weight

Dimensions (width) x (length) :129mm x 117mm(OI-S03-012)
:69.8mm x 99mm(OI-S03-022)

Environmental Specifications

Temperature(During operation): 5 to 35 Celsius
Temperature(During saving):-10 to 50 Celsius

Humidity(During operation): 30 to 80%RH (no condensation)
Humidity(During saving): 30 to 90%RH (no condensation)

Installing a CompactFlash Slot

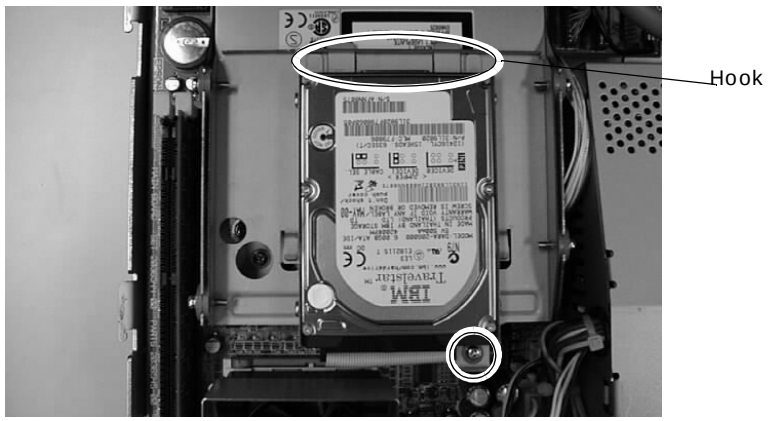
Follow the steps below to install a CompactFlash Slot.

CompactFlash Slot for HDD (OI-S03-022)

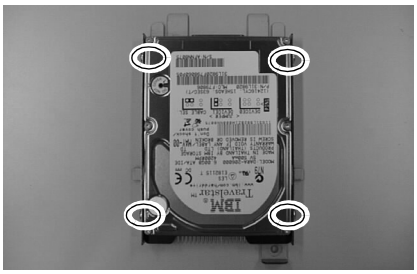
1. Remove the main cover. (See table 6-15)

2. Remove a screw that fixes the HD Drive on the CD-ROM Drive.

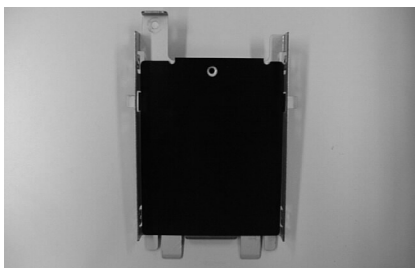
3. Unplug the HDD Connector and remove the HDD.
   The hook is attached on the front part. Pull the hool backward and remove it.



4. Remove the screw from the both sides of the case (2 screws for both sides, 4 screws in total), then remove the HDD from the metal case.

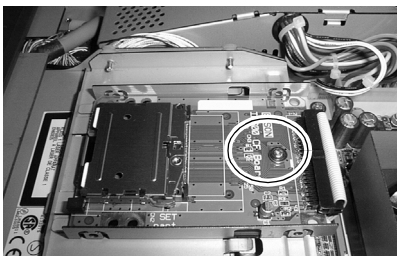


5. Set the insulation sheet pre-packed with the system on the metal case.



Note:
Set the both sides of the convex part of the sheet onto the metal case. Set the 1.5x4cm convex part of the sheet, which prevent the cables etc from damage by setting the edge of the screw under the metal case, to the bottom.

6. Place the compact flash board on the insulation sheet, then attache the compact flash on the board. Attach the compact flash board on the metal case with a supplied screw.



⚠ CAUTION:

Be sure to set the insulation sheet to prevent the cable from the damage.

7. Follow this procedure backward. Set the CompactFlash Slot on the CD-ROM Drive amd attach the main cover.

Installation is completed.

CompactFlash Slot For CD-ROM (OI-S03-012)

Follow the same steps as CD-ROM installation to install the CompactFlash for CD-ROM (OI-S03-012). Refer the CD-ROM Drive installation (See section 6-15).

⚠ *CAUTION:*

Attach the metal case after the Compact Flash Disk is installed on the Compact Flash Slot.
A tab is on the metal case to protect the Compact Flash disk from taking out. It may get damage the Compact Flash disk and CompactFlash Slot when the Compact Flash disk is taking out or inserted after it is attached on the metal case.

MSR Unit

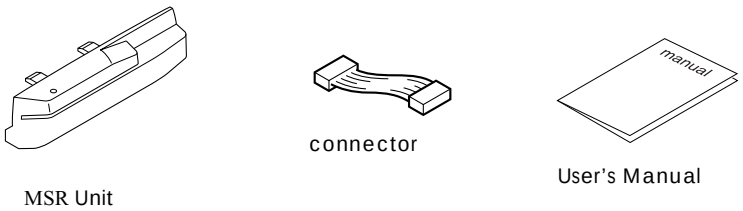
Description

MSR unit is a SR-600 dedicated magnetic card readable unit. Two types of the unit is available with the compliant truck type.
The data read by the MSR is output via keyboard interface within SR-600. Also, start / end character setting is available from the POS Key mode setting utility (PKMODE2.exe).

Model name	DM-MS123
Card	ISO I type track 1, 2, and 3
Keyboard Firm	Ver 3.01 or above

Supplied Items

Check that the itms shown in the table belwo is contained and none of the supplies are damaged.



6-9 Supplied Items with MSR Unit

Handling Guidelines

- ❑ Be sure to turn off the SR-600 to remove or attach the MSR unit.
- ❑ Do not insert the magnetic card from the wrong direction. Do not remove the card while the system is reading the magnetic card. It may cause reading errors.
- ❑ If the external keyboard is connected, never use the keyboard while it's reading the card. It may cause reading errors. On the other hand, do not operates the magnetic card reading operation during the keyboard operation.
- ❑ Use the magnetic card that withholding ISO standard.
- ❑ Retentivity of the magnetic card needs to be approximately 24,000A / m.
- ❑ To set the header and the footer for the readable data of the magnetic card, use the" keyboard firm setting utility" attached with this product.
- ❑ Do not place it around the object which generate magnetic or derivation noise such as CRT, switching power supply, compresser etc.

- ❑ Do not use this product in the place where the lots of dusts are found.
- ❑ If MSR unit is damaged, it may display the keyboard error message when rebooted.
- ❑ If JIS II type is used in DM-MS112, the setting from the utility is necessary.

Specifications

Figure 6-6 MSR Unit Specifications

	DM-MS123
Compliant magnetic card	ISO7811, JIS x 6301 1type truck 1, 2, and 3
External Interface	LCD Unit (Connected to DM-LS121S and DM-LS121T)
Compliant keyboard firm	Ver 3.01 or above
Dimensions	46mm(W) x 174mm(D) x 56mm(H) (Pointed portion not included)
Weight	Approximately 270g
Environmental Specifications	Temperature During operation:5 to 35 Celsius (41 to 95 Fahrenheit) During saving:-10 to 50 Celsius (14 to 122 Fahrenheit) Humidity During operation:30 to 80%RH (no condensation) During saving:30 to 85%RH (no condensation)
Reliability	Life of magnetic head:300,000 (Magnetic card readable counting time)

Installing a MSR Unit

Follow the steps below to install a MSR unit.

1. Connect the connecter on a MSR.

⚠ CAUTION:

Connect the brown line of the connecter with no.1 pin in order with the number on the board.
Connecter may get damaged if the pin is not connected correctly.

2. Connect the connecter on the board of the mSR unit.
   Connect with no. 1 pin following the same procedure as step 1.

3. Attach four tabs on the concave portion of the LCD unit to connect with the MSR unit.

⚠ CAUTION:

Do not shorten the connecter when you attach the MSR unit.

4. Secure the MSR unit using two screws.

Installation is completed.

Setting Utilities

Utility for MSR contains two types of utilities as listed below:

- MSR Auto Setting Utility (for MS-DOS, for Windows)
- MSR Setting Utility (for MS-DOS , for Windows)

Installation

MS-DOS

Utilities listed above are stored in the following Backup Directory.

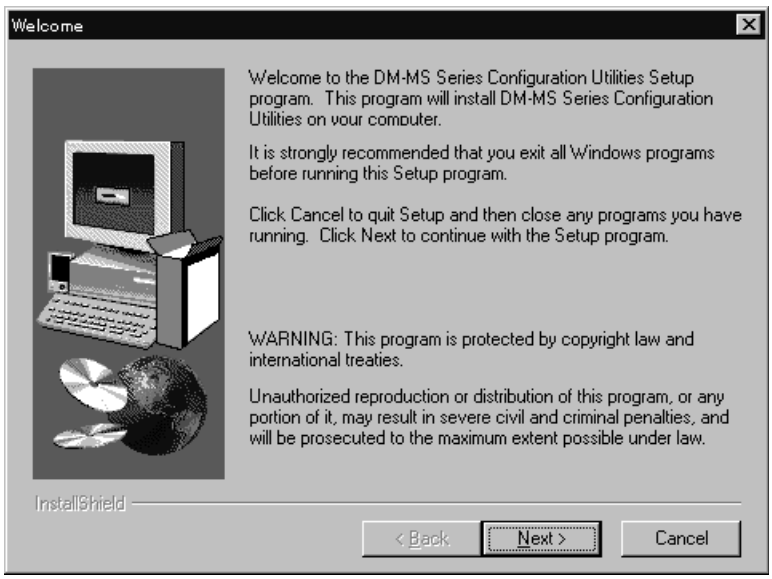
C:\BACKUP\KEYCFG

Before boot the system, create the folder such as “C:\MSR_util". Then copy the file from the Backup Directory.

Windows 95/98, Windows NT

Follow the steps below to install.

1. Select “C:\BACKUP\MSRCFG" folder.
2. Start “SETUP.EXE".
3. Welcome screen is displayed. Check the contents and cluck [Next] button.



4. Choose Destination Location is displayed. Check the folder installing to, then click [Next] button. Normally install it to “C:\Program Files\MSR Config" as an default, but the folder can be changed if necessary.

5. Copying of file and various settings are executed.

6. Setup Complete screen is displayed. Click [Finish] button.

Installation is completed. Utility is activated.

MSR/Keyboard Auto Setting Utility(MS-DOS)

The POS keyboard definition information can be set automatically with this utility. The format when starting this utility is shown below.

PKLOAD.EXE data-file

Process Description

The following data is automatically set with this utility.

- Scan Code Table Update File for MSR (.PKL)

It checks the extension whether or not the specified file is enabled. Ensure that the extension is specified. Download function of Upload File is executable by PKUPDT2.EXE.

Figure 6-7 Message

Contents	Message
Startup	EPSON POS Keyboard Auto Definition Utility Vx.xx.xx
Usage	Usage: PKLOAD data-file data-file: definition data file .K84 :84Key definition data .K28 :28Key definition data .KYL :KeyLock definition data .PKL :PKMODE definition data
PKMODE Definition Data Transfer	The same message as MS-DOS Setting Utility(PKMODE.EXE) is displayed.
End Message - Firm Version Error etc - Parameter Error - Communication Error - File Error	 Firmware version is not correct Invalid parameter Firmware communication error File access error : No such file or directory

Figure 6-8 End Code

End Code	Contents
0	Normal End
10	Firm Version differs. Or, It is executed in other PC (Abnormal End)
11	Parameter Error (Abnormal Error)
14	Occurrence of Communication Error with Firm (Abnormal End)
20	Occurence of Error during the File Access (Abnormal End)
21	Occurence of failure with File Data Format (Abnormal End)

File Format

The file for PKLOAD definition is created by Text Editer etc. Specify the File extension '.PKL'. The format contains sections as shown in the table below.

Figure 6-9 File Format

Section	Entry	Set Value	Comment
[General]	Version	PKL100	Fixed value. Be sure to write it in the beginning
	IgnoreCommands	Select Off or On	Ensure that the command is not effective after 'On' is selected.
	SystemParam00		Set by Offset or Value Format. 00h < Offset ≤ FFh, 00h ≤ Value ≤FFh
[MSR]	ValidTracks	Select form 1,2,3, or J	Multi-selection is posible.
	Beep	On, Off	
	CodeType	US ,JP ,FR ,GR ,SP	
	CardStart		See the '4.7 SS/ES Code Inpuit Character' for the information of Input Character. '<, >, |' can input by the character. Input '\nn' for hexadecimal input. The input range is 01h to 7Fh. Upto 7 characters can be input. After 8 characters are ignored. New line character is enabled. Do not put space or TAB.
	CardEnd		
	Track1Start		
	Track1End		
	Track2Start		
	Track2End		
	Track3Start		
	Track3End		
	JIS2Start		
	JIS2End		
	CodeDefinition00		

Entry setting is deleted if there isn't ant description after entry.

From 00 to 99 value can set to SystemParam00 and CodeDefinition00. The set value increases one by one. Do not create same value.

Note:

- ❏ This utility is executable with DOS mode. It is not executed with Windows DOS window. Ensure to start DOS, then execute this utility.
- ❏ As this utility uses the K/B interface for communicating with the firmware, ensure that the MSR and an external K/B are not used during execution. Abnormalities will occur with the data if these are operated during communications, and there are cases where subsequent normal start-up will not be possible.
- ❏ Do not reset the system or switch the power supply off when this utility is in operation.

MSR/Keyboard Auto Setup Utility(Windows)

When this utlity starts, it transfers the setings saved in the file to the MSR. The document formats is listed below.

PKLOAD32 File [/ n]

File : Specify the Setup File for this utility with Setup File Pass Name.

/ n : The dialog is displayed when the installation is completed.

When the setting file (see the following page) for this utility is being transferred, the following status is displayed. "hh" shows the character code in the case that the MSR character conversion settings are being transferred, and at all other times, it shows the system variable area offset in hexadecimal. "d" shows the number of retries. The maximum number of retries is 6 times.

Writing Configuration 0xhh - d ...

Setup File

The setup file for this utility is listed below.

```
[General]

    IgnoreCommands=On

    SystemParam00=49,0

    SystemParam01=&32,&f7


[MSR]

    Beep=On

    CodeType=US

    ValidTracks=1,2,3,J

    CodeDefinition00=48,10

    CodeDefinition01=&31,11,Shift

    CodeDefinition02=&32,&0A,Ctrl

    CardStart=CS

    CardEnd=CE

    Track1Start=1S

    Track1End=1E
```

Track2Start=2S

Track2End=2E

Track3Start=3S

Track3End=3E

JIS2Start=JS

JIS2End=JE

In the [General] section, entry lines which basically have an influence on the utility as a whole are described.

“On” can be selected for the IgnoreCommands so that reading or writing to the Keyboard and MSR setting is disabled.

System Param xx is described in the case where data are written to the system variable area. Variable offset and data are separated by a ",". These two are byte widths, and they can be specified in the form of decimal numbers, hexadecimal numbers and characters. In the case of decimal numbers, they are described as is, but in the case of hexadecimal numbers, it is necessary to add a "&" at the top of the number while in the case of characters, it is necessary to add a "$" at the top of the number. Multiple System Param xx items can be declared. Each of these parameters is described in order with xx being a decimal number identifying each parameter, beginning with 00. The maximum number of parameters that can be described is 99.

In the [MSR] section, entry lines related to the MSR are described.

"On" or "Off" can be specified for Beep. If "On" is specified, it beeps during MSR reading, and when "Off" is specified, it does not beep.

Selecting US, JP, FR, GR or SP can be specified in Code Type. The key input data generated during MSR reading complies with the keyboard arrangement of the country specified.

"1," "2" or "3" can be specified in Valid Tracks. If "1" is specified, Track 1 is read, if "2" is specified, Track 2 is read and if "3" is specified, Track 3 is read. Multiple tracks can be specified, in which case they are separated by a ",".

Code Definition xx is described in the case that a unique character is generated during MSR reading. Information is input in the order of character code, then key No., then information on the keys which are pressed simultaneously, with each of the items separated by a ",". If it is not necessary, the information on the keys which are pressed simultaneously can be omitted. The character code and key No. are in the same format as in System Param xx. Simultaneously pressed key information can be specified with the Shift, Ctrl, Alt or AltGr keys. It is also possible to describe multiple Code Definition xx items. In such a case, each code definition is described in order with xx being the decimal number identifying each code, beginning with 00. The maximum number of code definitions that can be described is 99.

CardStart, CardEnd, Track1Start, Track1End, Track2Start, Track2End, Track3Start, Track3End, JIS2Start and JIS2End are SS/ES during MSR reading. Including spaces, ordinary characters can be described as is. In the case of special characters, they are described as \xx. xx is a 2-digit hexadecimal number. Specially, a carriage return, tab and can be described as \n, \t and \\, respectively.

Lines which start with a ";" are regarded as comment lines and are ignored. A comment cannot be described at the right end of an entry line. Also, overall, unnecessary space and tab characters cannot be included.

MSR/Keyboard Setting Utility (MS-DOS)

This utility is intended to set the Environment Variable for the DM-MS series Keyboard Firmware Version 3.00 and higher. Use the olf environmental setup utility(PKMODE.EXE) for Keyboard version Ver2.XX and lower.

Command

Run the utility by typing the command in the following format:

PKMODE2.EXE [MSR1|MSR3|MSR] [US|JP|FR|GR|SP] [CMDOFF|CMDON]
[TK0SS=string] [TK0ES=string] [TK1SS=string] [TK1ES=string]
[TK2SS=string] [TK2ES=string] [TK3SS=string] [TK3ES=string]
[TKJSS=string] [TKJES=string] [BEEP=ON|BEEP=OFF] [MSR=m...]
[KEYTBL=pathname] [/TRACE] [/TRON] [/TROFF] [/VAL=xxh,yyh]
[/PARA[zzh]]

Figure 6-10 Description of Parameters

Parameter	Descriptions	Default
MSR1	Do not use this parameter in DM-MS series.	-
MSR3	Do not use this parameter in DM-MS series.	-
MSR	Sets MSR unit decoding to enable tracks 1, 2 and 3 to be decoded.	-
US	Returns the MSR data with the English 101 keyboard scan code.	
JP	Returns the MSR data with the Japanese 106 keyboard scan code.of MSR unit.	
FR	Returns the MSR data with the French keyboard scan code.	
GR	Returns the MSR data with the German keyboard scan code.	
SP	Returns the MSR data with the Spanish keyboard scan code.	
CMDOFF	Ignores the K/B interface command and outputs all commands to the external K/B.This is set prior to programming POS keyboards that are connected to external K/B. This setting is cancelled when the system is reset or the main power supply is switched off, and automatically returns to the CMDON status.	
CMDON	Enables K/B interface commands to be receivedgramming.	Default Value
TK0SS=string	Overwrites the MSR card unit start flag to 'string.'	""(none.)
TK0ES=string	Overwrites the MSR card unit end flag to 'string.'	""(none.)
TK1SS=string	Overwrites the MSR 1 track end flag to 'string.'	"%"
TK1ES=string	Overwrites the MSR 1 track end flag to 'string.'	"?"
TK2SS=string	Overwrites the MSR 2 track start flag to 'string.'	";"
TK2ES=string	Overwrites the MSR 2 track end flag to 'string.'	"?"
TK3SS=string	Overwrites the MSR 3 track start flag to 'string.'	"+"
TK3ES=string	Overwrites the MSR 3 track end flag to 'string.'	"?"
TKJSS=string	Overwrites the MSR JIS II start flag to 'string.'	" "(20h)
TKJES=string	Overwrites the MSR 1 JIS II end flag to 'string.'	" "(7Fh)
BEEP=ON	Validates the sound loaded from the card with the MSR123 and illuminates the LED simultaneously.	
BEEP=OFF	Invalidates the sound loaded from the card with the MSR123 and only illuminates the LED.	
MSR=m...	Specifies the track that enables MSR decoding. The characters that can be specified are "1", "2" and "3", and these are specified after "=". An error will be triggered if duplicate characters are specified simultaneously. "MSR1" is the same as "MSR=12", and "MSR3" is the same as "MSR=23".	

Figure 6-10 Description of Parameters

Parameter	Descriptions	Default
KEYTBL=pathname	Sets the scan code conversion table in order to convert the MSR data into key scan codes. This is used for keyboards other than the US101 and the Japanese 106 keyboards. The name of the file in which the scan table is located in specified with 'pathname'.	
TRACE	Displays the trace information in a standard output. This can be used directly and saved in files, etc.	
/TRON	Enables the trace function.	
/TROFF	Disables the trace function.	Default Value
/VAL=xxh,yyh	Sets the xxh address of the system variables to yyh.	
/PARA[zzh]	Displays the system variables between the 00h and FFh values. The SRAM values between zz00h and zzFFh will be displayed when zzh is specified.	

String can set the data within " " up to 7 characters.

It is possible to specify multiple parameters at the same time. However, parameters with the "/" symbol cannot be specified together with parameters without the "/" symbol.

As the parameters will be interpreted and executed sequentially, an error will be displayed and the process will move onto the next parameter without an abnormal end when an invalid parameter has been specified.

The values other than CMDOFF set with this command and written into the K/B firmware will not be erased when the power supply is switched off.

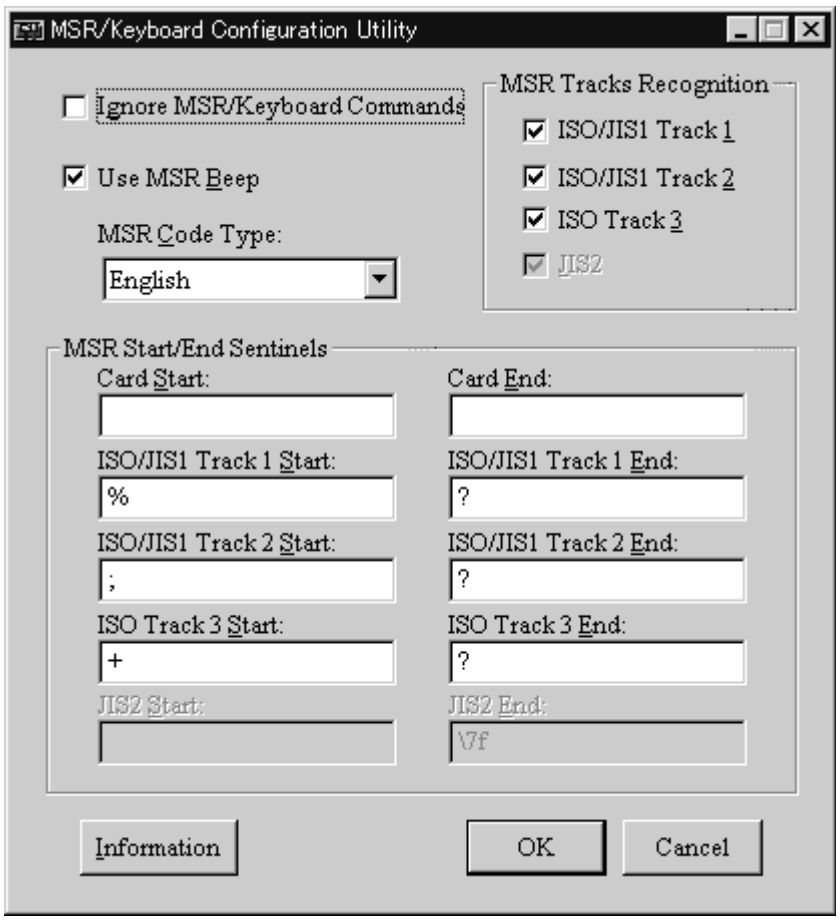
Note:

- ❏ This utility only be executed with DOS mode. It is not executed with Windows DOS window. Ensure to start DOS, then execute this utility.
- ❏ As this utility uses the Keyboard interface for communicating with the firmware, ensure that the MSR and an external Keyboard is not used during execution. Abnormalities will occur with the data if these are operated during communications, and there are cases where subsequent normal start-up will not be possible.
- ❏ Do not reset the system or switch the power supply off when this utility is in operation.
- ❏ There are certain parameters that are not valid depending on the version of the Keyboard firmware.

MSR/Keyboard Setup Utility(Windows)

Startup

The screen shown below is a utility setting screen.



6-10 MSR/Keyboard Setup Utility setting Screen

Normally it is installed in Start menu. Click the menu to start the utility. It also starts by double clicking the fiel icon from the Explorer.

Information

The information dialog screen is displayed by pressing the Information button or Alt + I key (or press Enter key while Information button is selected). Utility name, Version, Copyright is indicated in this dialog. The information dialog is shown below.

6-11 Information Dialog Screen

Exit

Press Cancel button or ESC key to exit the utility. The change in the setup is not updated to the Keyboard Firm in this case. Press OK button to update the new setting and it exits the utility.

Setup

The following Setup is available from this utiliy.

- Ignore Keyboard / MSR Commands
  When this check box is checked, the system does not accept the command to the Keyboard Firm anymore. This command is used for the external Programable Keyboard.

- Use MSR Beep
  Check this check box to beep during reading the data.

- MSR Tracks Recognition(ISO Track 1, ISO Track 2, ISO Track 3)
  Check the check box of the truck you want to read. Multiple items can be selected at the same time.

- MSR Code Type
  Select the type according with the Windows Keyboard setting.Select the setting that matches the language version of Windows in use. English, Japanese, French, German, Spanish are selected from the list.

- MSR Start/End Sentinels(Card Start, Card End, ISO/JIS1 Track1 Start, ..., JIS2Start, JIS2End)
  Set the character to be added at the front and end of data during loading. It ispossible to specify this setting for each card and each track. Leave this field blank if no character is to be added. The unique characters can be set ussing the code below:

Carriage return	'\R' or '\r'
Tab	'\T' or '\t'
'\'	'\\'
Others	'\xx' xx represents 2 digits hexadecimals. Directory specifing the character codes in hexadecimals.

MSR Firmware Update Tool

Description

This tool is for overwriting Ver.3.00 and higher releases of the DM-MS series Keyboard firmware. The older release of the firmware overwriting tool (PKUPDT.EXE) is to be used for overwriting Ver.2.XX and previous firmware.

Commands

The commands are executed in the formats shown below.

PKUPDT2.EXE	[binary-file [/F]] [/I]	(firmware overwriting)
PKUPDT2.EXE	/Ddata-file | /Udata-file	(setup data transmission)

Parameter descriptions

binary-file:	The binary file for firmware overwriting purposesns
/F:	Does not check the version during firmware overwriting
/I:	Initializes the setup datasion durin
/Ddata-file:	Transmits the contents of the data set-up file specified with 'data-file' to the irm ware
/Ufata-file:	Uploads the setup data contained in the firmware and writes it into the data-file
No parameter:	Displays the current version

Processing details

It is not possible to specify the reading (upload) and writing (download) of setting data at the same time as overwriting the firmware owing to the fact that the setting data is not initialized with the defaults.

The current version is displayed and the procedure then ended normally (End Code 0) when no parameter is specified.

When 'binary-file' has been specified, the current firmware version is compared with the version of the binary file to be overwritten, and overwriting will only be performed if the binary file version is newer than the current version. This version check is performed for all Vn.mm.xx.

Specify the /F parameter to forcibly overwrite the firmware without performing a version check.

Specify the /I parameter to initialize the setup data during firmware overwriting.

When '/Ddata-file' has been specified, the setup data in the specified file will be downloaded to the firmware. Only the specified data-file uploaded with this tool are eligible for this, and the data-file uploaded from the IM-300 with PKUPLD.EXE will be downloaded with the automatic setup tool.

The extension for the Upload Data of this tool is '.FLD', the Upload Data by PKUPLD.EXE is ".$$$", and other extensions are end with error.

When '/Udata-file' has been specified, the setup data recorded in the firmware will be uploaded and written into the data file. Data uploaded with this parameter cannot be downloaded into the SR-600.

Specify the extension log of the data file as '.FLD' when using data uploaded with PKUPDT2.EXE. When the extension is not specified, '.FLD' is automatically added.

The procedure will end with an error if the specified file cannot be found or the format of the file is wrong.

Note:

- This utility can only be executed in the DOS mode. It does not operate on the Windows DOS Window. Execute this utility after start up the DOS.
- As this utility uses the Keyboard interface for communicating with the firmware, ensure that the external keyboard and the MSR are not used during execution. Abnormalities will occur with the data if these are operated during communications, and there are cases where subsequent normal start-up will not be possible.
- Do not reset the system or switch the power supply off when this utility is in operation.
- Never specify an invalid binary file or data file. Only a simple header check is run on the files, so if files that have been partially deleted or added to are used, normal operations will not be possible.

- The setup data will not be initialized unless the /I parameter has been specified when overwriting the firmware. However, if the format of the setup data is to be modified with a firmware upgrade, either initialize the setup data with the use of the /I parameter, or upload/download the setup data.
- As the Keyboard interface is used for transferring the setup data, ensure that the command has been enabled. If [CMDOFF] is selected from MSR/Keyboard Setup Utility (PKMODE.EXE), data transfer will not be possible and the procedure will end with an error.

Confidential

DM-D Unit

DM-D unit is a customer display. It is connected to the rear part of the SR-600 cover.

Model name	DM-D110
	DM-D500

Note:
The customer display holder for DM-D110 and DM-D500 attachment is supplied with SR-600. Refer the appropriate manual for more details to attach DM-D110 and DM-D500.

⚠ *CAUTION:*

Be sure to use the system within the specification. Do not use in locations subject to high temperature or humidity levels. Never condensate the product.
If the system is not used within the specification, it may deteriorate the product's life and the display quality, or result in damage.

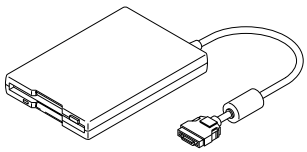
Floppy Disk Drive

Description

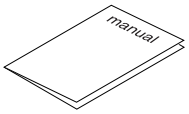
An external 3.5' FDD can connect to SR-600 as an optional. Reading and writing a 1.44MB/ 720KB Floppy Disk is posspible with FDD.

Supplied Items

Check that the items shown below is contained.



FDD Unit



User's Manual
(This document)

Refer the developer's guide for the attachment method.

Specifications

❑ General Specifications

Compliant Floppy Disk :	3.5-inch 720KB, 1.44MB
Interface :	Dedicated Interface
Power Supply :	+5VDC ± 5% (Provided by SR-600)

❑ Dimensions and Weight

Dimensions (width) x (length) x (height):	101.5mm x 147mm x 17.2mm (raised portion and cables not included)
Weight :	Approximately 300g

❑ Environmental Specifications

Temperature (during operation):	5 to 35 Celsius
Temperature (during saving):	-10 to 50 Celsius
Humidity (during operation):	30 to 80%RH (no condensation)
Humidity(during saving):	30 to 90%RH (no condensation)

❑ Reliability

MTBF:	30,000 charging time (under normal condition)

⚠ *CAUTION:*

Turn off the SR-600 to attach or remove the Floppy Disk Drive.

DIMM

Descriptions

Two 168pin DIMM Socket is provided and the maximum of 256MB Memory can be mounted. DRAM only supports 3.3V SDRAM(Synchronous DRAM). DIMM can be used singulary, and also two DIMMs with different capacity can be inserted to use. The basic specification must compliant with Intel PC SDRAM Unbuffered DIMM Specification.

Basic Specification

SDRAM Specificat:ion: Compliant with Intel PC SDRAM Specification

Operation Clock: 66MHz 4/Socket
(Input from Chipset via Clock buffer)

PC100 compliant (for 100MHz clock)DIMM can be used.

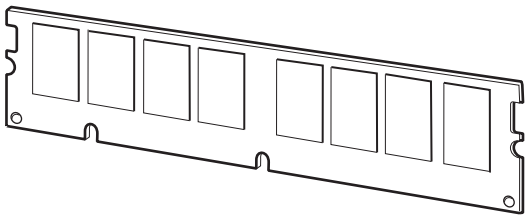
Required Height:Under 36mm (Maximum 38.23mm under Unbuffered DIMM Specification)

Serial PD (SPD) : Must compliant with Intel PC SPD Specification
(Memory information acquisition)

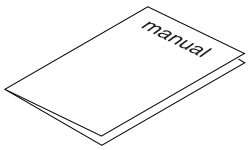
Operation Mode: Compliant with Self-reflsh mode

Supplied Items

Check that the itms shown in the table belwo is contained and none of the supplies are damaged.



DIMM



User's Manual

6-12 Supplied Itmes with DIMM

⚠ CAUTION:

Use it within the specification standard. Never use is in the high temperature and humidity, and avoid the condensation.If this product is not used within the specification standard, it may result in the shorten its life and the damege of the product.

Specifications

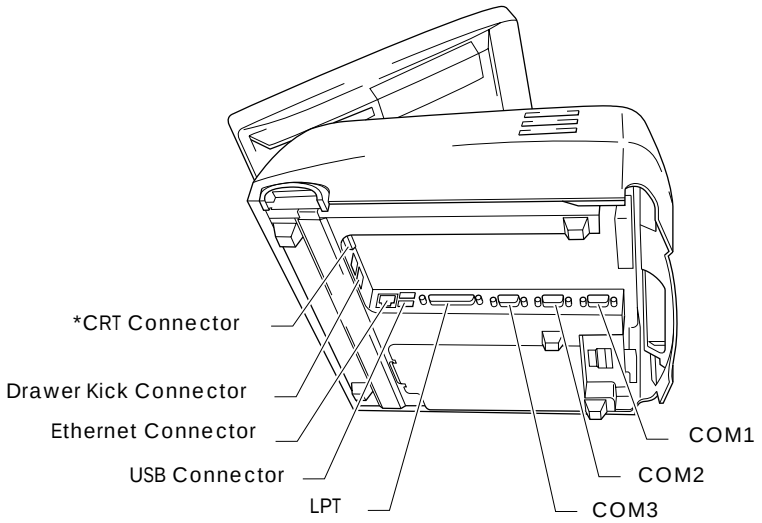
Figure 6-11 DIMM Specifications

Type	72 pin high speed page mode or EDO type
Access Type	70ns or below(60ns or below is recommended)
Parity	Select allowance or abandon from the BIOS set up menu
Weight	4MB/8MB/16MB/32MB
Input voltage	+5V +/- 5%
External dimensions	Width: 107.95mm or below Height: 25.4mm or below
Thickness	Parts included:9.40mm or below Parts not included:1.27 +/- 0.1mm or below (Board only)

Appendix 1
Interfaces

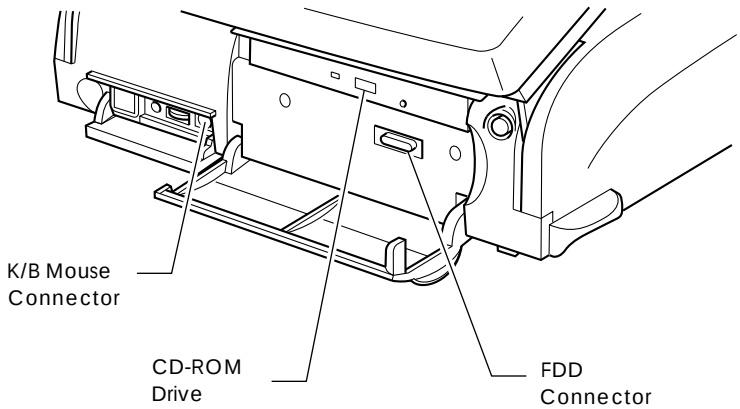
Connector Location

Connectors are on the bottom of the base unit and inside of the switch cover and CD cover. Connector layout is shown in the figure below.



* CRT and drawer kick connector is used if the optional CRT/drawer board is installed.

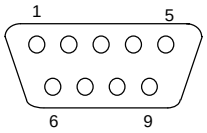
A1-1 Bottom View



A1-2 Switch Cover/CD Cover

Serial Port

SR-600 has three NS16550 compatible serial ports and three external connectors. These connectors can be used for COM1, COM2 and COM3. Optional devices can be connected to the external connectors. External serial port connector is a 9-pin D-Sub male type. Assignments of serial connector signals are shown below.



A1-3 Serial Port Connector

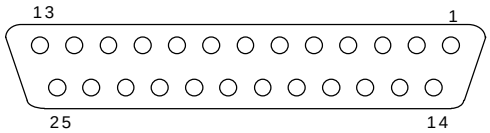
Table A1-1 Serial port pin assignments()IO board CN5/6/7)

No.	Signal name	I/O	Description
1	DCD/Power supply (*)	I/--	Carrier detectin signal or power supply output
2	RXD	I	Received data signal
3	TXD	O	Transmisson data signal
4	DTR	O	Terminal ready signal
5	GND	--	Ground
6	DSR	I	Data set ready signal
7	RTS	O	Transmission request signal
8	CTS	I	Transmission data cleared signal
9	RI	I	Ring signal

(*) COM1 and COM2 can generate 5V output to no. 1 pin by setting the BIOS.

Parallel Port (LPT Port)

The LPT connector is a 25-pin D-Sub female connector. You can set the LPT port to bidirectional or EPP / ECP mode in BIOS setup.
The SR-600 does not support an OCIA interface.



A1-4 Parallel connector

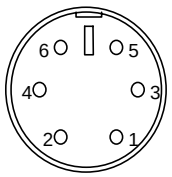
Table A1-2 Parallel connector signals assignments

No.	Signal name	I/O	Description	
1	STROBE#	O	Strobe signal	
2	PD0	I/O	Data signal	
3	PD1	I/O		
4	PD2	I/O		
5	PD3	I/O		
6	PD4	I/O		
7	PD5	I/O		
8	PD6	I/O		
9	PD7	I/O		
10	ACK#	I	Acknowledge (receiving complete) signal	Low: Receiving enabled
11	BUSY#	I	Busy signal	Low: Busy
12	PE	I	Paper error signal	High: Error
13	SLCT	I	Selection signal	High: Select
14	ATFD#	O	Auto-feed signal	Low: Papaer feed
15	ERR#	I	Error signal	Low: Error
16	INIT#	O	Initialization signal	Low: Initialize
17	SLIN#	O	Printer selection signal	High: Select
18 to 25	GND	--	Ground	

(*) Signals indifcates other meanings except data signal in the EPP and ECP modes.

Keyboard/Mouse Port

The 80C42 compatible circuit in the M1543 chip on the mother board contols the data from the PC keyboard through the 80C31 processor on the POS board. Any mini-DIN type keyboard with PC/AT compatibility can be connected directly to the keyboard connector. The PS/2 mouse must be connected with a branch cable. Assignments of signals are shown below. The electric current capacity of the attached keyboard must be 500mA or less.



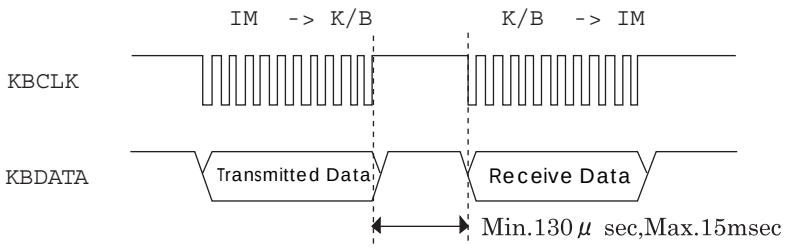
A1-5 Keyboard/Mouse connector

Table A1-3 Assignment of keyboard/mouse port pin assignments (VR board CN2)

No.	Signal name	I/O	Description
1	KBDATA	I/O	Keyboard data signal
2	MSDATA	I/O	Mouse data signal
3	GND	--	Ground
4	+5V	--	+5V of electrical power
5	KBCLK	I/O	Keyboard clock signal
6	MSCLK	I/O	Mouse clock signal

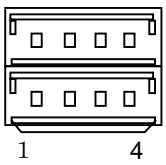
There are the following restrictions on the keyboard interface.

- **EFh** and **F1H** are the key definition commands for the 84 keyboard unit, and a series of data following those two commands are not sent to the external keyboard. (You may send the data using PKMODE command.)
- Unless 130 or more microseconds elapses after data transmission to the external keyboard, the data from the keyboard cannot be received. Also, the response from the external keyboard to the command must be given within 15 milliseconds.



USB Port

Two USB connectors are placed on the bottom of the unit. The electric current capacity of the connected devices must be 500mA or less.

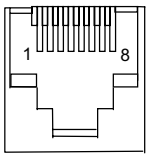


A1-6 USB port connector

Table A1-4 USB connector port pin assignments(IO board CN4)

No.	Signal name	I/O
1	+5V	--
2	USB-	I/O
3	USB+	I/O
4	GND	--

Ethernet Port



A1-7 Ethernet port connector

Table A1-5 Ethernet port pin assignments (IO board CN3)

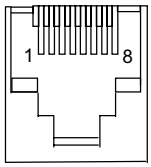
No.	Signal name	I/O	No.	Signal name	I/O
1	TX+	O	5	N.C.	-
2	TX-	O	6	RX-	I
3	RX+	I	7	N.C.	-
4	N.C.	-	8	N.C.	-

Customer Display Port

DM-D series customer display is connected to the customer display board. The connector is a 8-pin modular connector.

⚠ *CAUTION:*

The connector for the customer display and the Ethernet is a same RJ-45 type. Be sure to connect the correct peripherals to avoid incorrect connection.



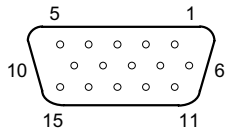
A1-8 Customer display port connetor

Table A1-6 DM-D connector pin assignments

No.	Signal name	I/O	Description
1	FG (Frame GND)	--	Frame ground
2	RXD (not used)	I	Received data (not used in this unit)
3	TXD	O	Transimission data
4	DTR (not used9	O	Unit ready signal (always at ready)
5	DSR/CTS	I	Customer display ready signal
6	SG (Signal GND)	--	Signal ground
7	+12V(DC)	--	+12V of electric power
8	PGND (Power GND)	--	Signal ground

CRT Port

The CRT connector is a 15-pin D-Sub female connector located on the optional drawer board.



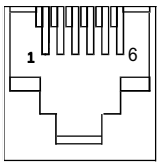
A1-9 CRT connector

Table A1-7 CRT port pin assignments(DRW board CN2)

No.	Signal name	I/O	Description
1	RED	O	Red data
2	GREEN	O	Green data
3	BLUE	O	Blue data
4	N.C.	--	Not connected
5 to 8	GND	--	Ground
9	N.C.	--	Not connected
10	GND	--	Ground
11	N.C.	--	Not connected
12	N.C.	O	Not connected
13	HSYNC	O	Horizontal synchronization signal
14	VSYNC	O	Vertical synchronization signal
15	N.C.	I	Not connected

Drawer Port

The connector is a MOLEX 52065-6615 equivalent 6-pin modular connector on the optional drawer board.



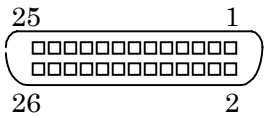
A1-10 Drawer port connector

Table A1-8 Drawer port pin assignments (DRW board CN3/4)

No.	Signal name	I/O	Description
1	FG	--	Frame ground
2	DKD1/2	O	Drawer 1/ 2 kick-out signal Low:Open
3	DK Status	I	Drawer status signal
5	+24V	--	+24V(DC) of electrical power
6	DKD2	O	Drawer 2 kick-out signal Low:Open
7	SG	--	Signal ground

Floppy Disk Drive Connector

One 3.5-inch floppy disk drive, which can read and write 1.44MB and 720KB format floppy disks, can be installed as an optional device in the SR-600.
The connector is a MOLEX 52629-2651(MOLEX) or equivalent connector.



A1-11 FDD Connector

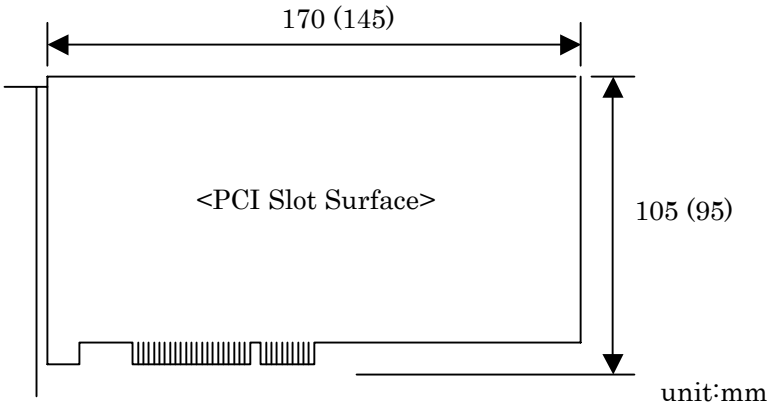
Table A1-9 Floppy disk drive connector pin assignments (Main board CN7)

No.	I/O	Signal name	No.	I/O	Signal name
1	-	GND	2	-	NC
3	O	HDSEL#	4	I	RDATA#
5	-	GND	6	O	WDATA#
7	O	FMODE#	8	-	NC
9	O	DS0#	10	-	+5V
11	-	+5V	12	-	+5V
13	I	INDEX#	14	I	WP#
15	I	TRK0#	16	-	NC
17	O	WGATE#	18	-	GND
19	-	NC	20	O	STEP#
21	O	DIR#	22	O	MTRON#
23	-	NC	24	I	DSKCHG#
25	-	GND	26	-	NC

PCI Slot

The system has one PCI-compliant expansion slot. Any PCI-compliant expansion board can be used if its outline is not larger than the size shown in the figure below. However, the PCI card that can be used in the system is in conformity with PCI Version 2.1.

The connector in the PCI-compliant expansion slot is a card edge type.
The dimensions of PCI cards that can be attached are shown below. The maximum card size is 70mm x 105mm. Remove the main cover and under frame to attach or remove the 70mm x 105mm size PCI card. The number in the parentheses indicates the card size that is wearable and removable from the access point located by the side of SR-600. Be sure to use a PCI card with a width of 105 mm or less, for safety standard reasons.



A1-12 Outer dimensions of usable PCI-compliant board

Table A1-10 Assignment of PCI slot signalsM

B (Component side)			A (Solder side)			B (Component side)			A (Solder side)		
No.	I/O	Signal Name	No.	I/O	Signal Name	No.	I/O	Signal Name	No.	I/O	Signal Name
1	-	-12V	1	O	TRST#	32	I/O	AD[17]	32	I/O	AD[16]
2	O	TCK	2	-	+12V	33	I/O	C/BE[2]#	33	-	+3.3V
3	-	GND	3	O	TMS	34	-	GND	34	I/O	FRAME#
4	I	TD0	4	O	TD1	35	I/O	IRDY#	35	-	GND
5	-	+5V	5	-	+5V	36	-	+3.3V	36	I	TRDY#
6	-	+5V	6	I	INTA#	37	I/O	DEVSEL#	37	-	GND
7	I	INTB#	7	I	INTC#	38	-	GND	38	I	STOP#
8	I	INTD#	8	-	+5V	39	O	LOCK#	39	-	+3.3V
9	-	PRSNT1#	9	-	RESERVED	40	I/O	PERR#	40	I/O	SDONE
10	-	RESERVED	10	-	+5V(I/O)	41	-	+3.3V	41	I/O	SBO#
11	-	PRSNT2#	11	-	RESERVED	42	I/O	SERR#	42	-	GND
12	-	GND	12	-	GND	43	-	+3.3V	43	I/O	PAR
13	-	GND	13	-	GND	44	I/O	C/BE[1]#	44	I/O	AD[15]
14	-	RESERVED	14	-	RESERVED	45	I/O	AD[14]	45	-	+3.3V
15	-	GND	15	O	RST#	46	-	GND	46	I/O	AD[13]
16	O	CLK	16	-	+5V(I/O)	47	I/O	AD[12]	47	I/O	AD[11]
17	-	GND	17	O	GNT#	48	I/O	AD[10]	48	-	GND
18	I	REQ#	18	-	GND	49	-	GND	49	I/O	AD[09]
19	-	+5V(I/O)	19	-	RESERVED	50	CONNECTOR KEY		50	CONNECTOR KEY	
20	I/O	AD[31]	20	I/O	AD[30]	51	CONNECTOR KEY		51	CONNECTOR KEY	
21	I/O	AD[29]	21	-	+3.3V	52	I/O	AD[08]	52	I/O	C/BE[0]#
22	-	GND	22	I/O	AD[28]	53	I/O	AD[07]	53	-	+3.3V
23	I/O	AD[27]	23	I/O	AD[26]	54	-	+3.3V	54	I/O	AD[06]
24	I/O	AD[25]	24	-	GND	55	I/O	AD[05]	55	I/O	AD[04]
25	-	+3.3V	25	I/O	AD[24]	56	I/O	AD[03]	56	-	GND
26	I/O	C/BE[3]#	26	O	IDSEL	57	-	GND	57	I/O	AD[02]
27	I/O	AD[23]	27	-	+3.3V	58	I/O	AD[01]	58	I/O	AD[00]
28	-	GND	28	I/O	AD[22]	59	-	+5V(I/O)	59	-	+5V(I/O)
29	I/O	AD[21]	29	I/O	AD[20]	60	O	ACK64#	60	O	REQ64#
30	I/O	AD[19]	30	-	GND	61	-	+5V	61	-	+5V
31	-	+3.3V	31	I/O	AD[18]	62	-	+5V	62	-	+5V

Note) Signals indicated by crosshatching are not connected.
after a signal name indicates LOW active.
AD(26) is connected to slot no.1 IDSEL(#A16). AD(27) is connected to slot no.2 IDSEL.

Appendix 2

Power Management

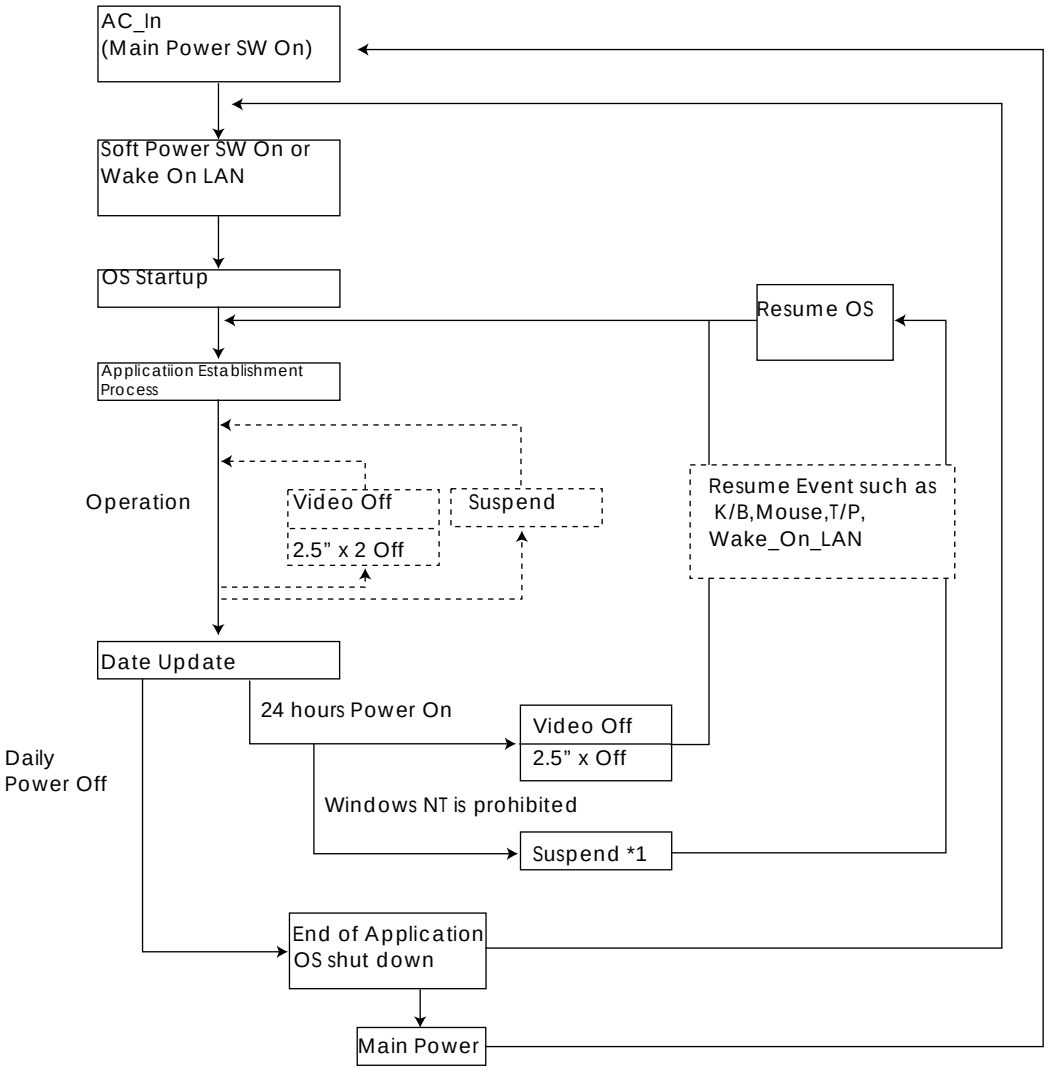
Description

Aim of the Power Management

The purpose for the power management function is to extend the life of supplies in SR-600. Those supplies aimed to extend its life by the power management system is listed below:

- ❑ LCD Back Light (Cold Cathode Tube)
- ❑ Fan (Main Power Fan, CPU Fan)
- ❑ HDD

User's Basic Operation and Power Management



*1:CPU, Video and fan stops its operation under suspend mode. HDD stops its operation also by original timer.

Comment

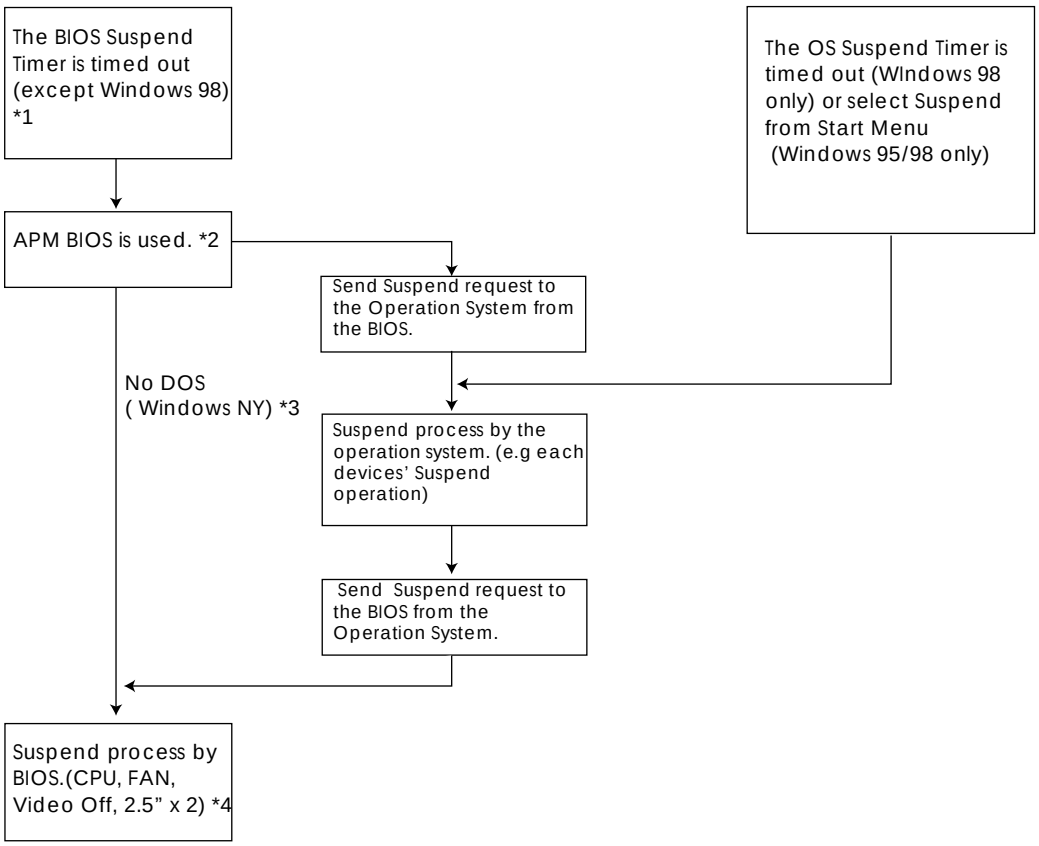
The operation described in the table above is recommended to extend the life of supplies.
If the LCD backlight is not used, apply the appropriate power managemnet to retain longer life of supplies.

Suspend

Set the BIOS in the suspend mode as listed below:

- ❏ CPU :Stop (Terminated by STPCLK kept supplying the clock.)
- ❏ Video :Off
- ❏ CPU fan, main power fan :On
- ❏ HDD : Power Down

Suspend Sequence



A2-1 Suspend transition sequence

*1:When the Video Off is set, Suspend transition time is Video Off Timer Setting Time added Suspend Timer Setting Time.

*2: When the OS is booted, it connects to APM BIOS and BIOS recognize APM BIOS.

*3: If the APM BIOS is set at disabled from the BIOS Setup, it is processed by the BIOS under Windows 95/98 system.

*4: BIOS sets the mode at suspend in the last process, and it determines whether or not it is on the suspend mode.

Comment

Table A2-1 Conditions of Suspend Transition according with *OS*

	Windows 95	**Windows 98**	**Windows NT**	**DOS**
Transition by Timer	Available from the BIOS Setup Time setting	Transit by the OS setting Time	Prohibited (note 1)	Transit by the BIOS Setup Time setting
Transition by Command	Available	Available	Not available	Not available

note 1) The clock may not operate normallye, if the system is changed to the Suspend mode under the Windows NT. The change setting under Windows NT is prohibited.

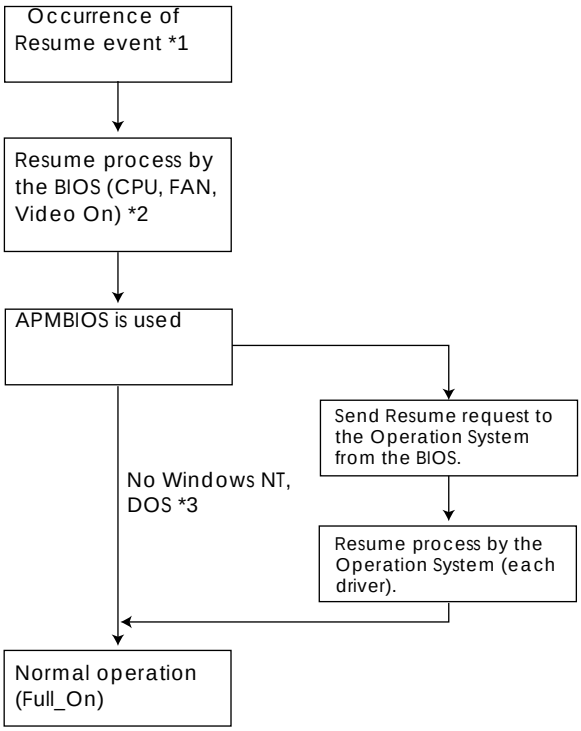
- BIOS Timer is set at disable in Windows 98, and BIOS Timer Timeout does not activated. Therefore, the Time set from the BIOS is invaid.
  If the BIOS Suspend Timer timeout is activated, it changes its process depends on how the APM BIOS is used in BIOS.

  In Windows 98, the transition to the Suspend is available with OS Timer. Howeve, the termination of this timer is not related to the Reload / Break Event setting from the BIOS Setup. Reload / Break Event setting is required to resume.

- If the APM BIOS is in use, BIOS send Suspend requests to the OS. It executes the Suspend process from the BIOS in APM compliant OS (except Windows 98). Then it sends Suspend command to BIOS, and BIOS executes the Suspend process.

  If APM BIOS is not in use such as Windows NT and DOS, BIOS executes the Suspend process.

Resume from Suspend Sequence



A2-2 Resume from the Suspend Sequence

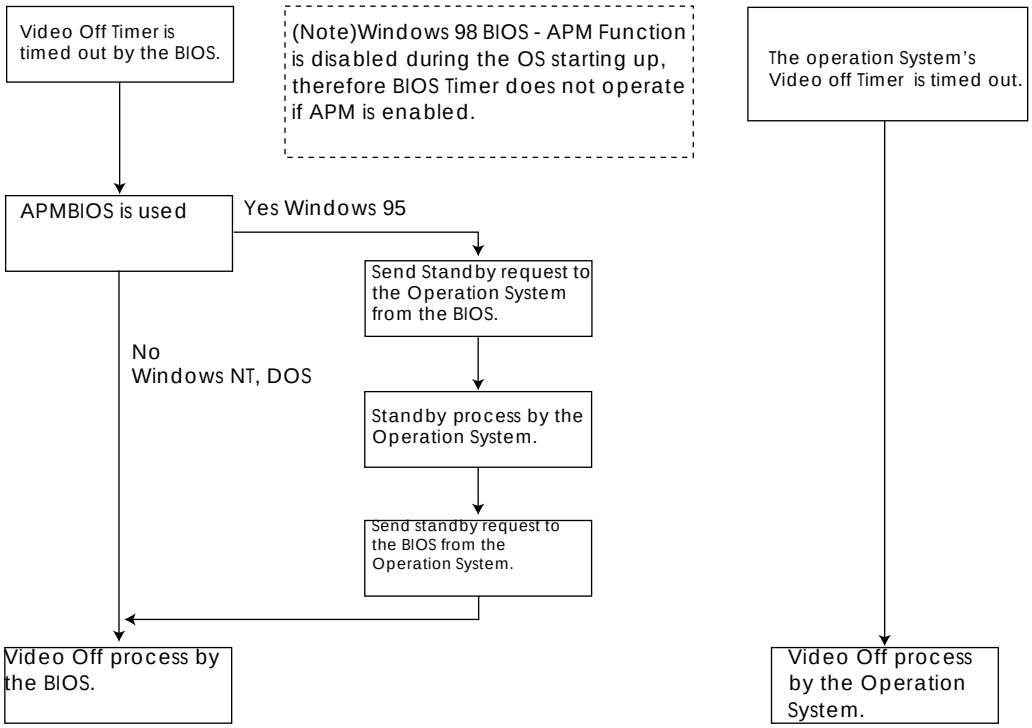
*1:Keyboard, Mouse, Power switch (not depending on the fanfanctions) and Wake On LAN are always resume event. Other events are the interruptions from device set at Reload / Break Event.

*2: HDD does not perform Power On cunction in Resume process. The first HDD access performs Power On function.

*3: If the APM BIOS is set at disabled from the BIOS Setup, BIOS does not send Resume request in Windows 95/98.

Video Off

Video Off Sequence



A2-3 Video Off Sequence

Comment

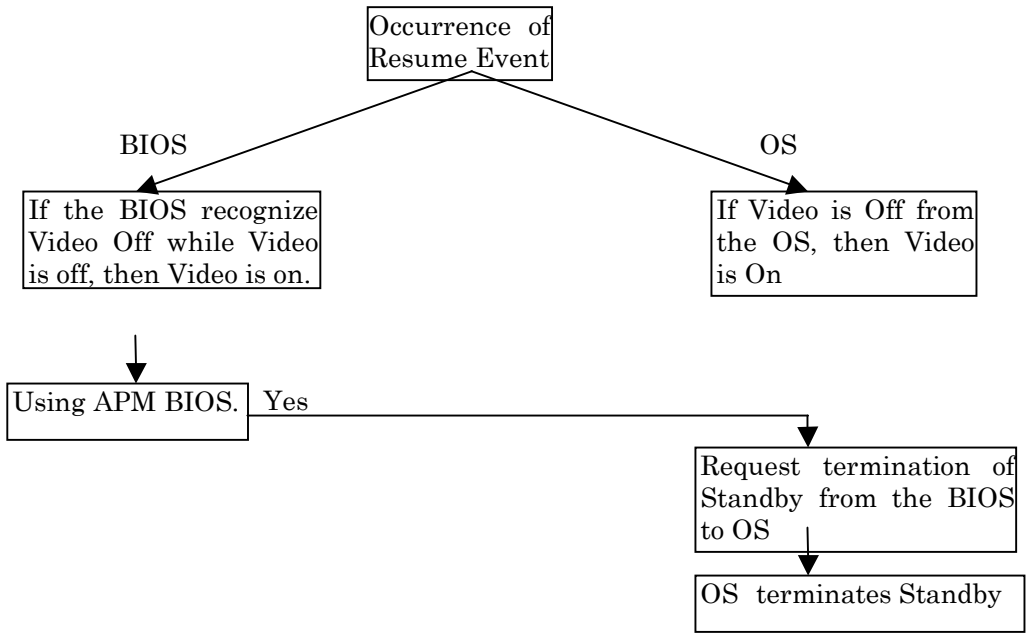
.

Table A2-2 Conditions of Video Off Transition according with *OS*

	Windows 95	**Windows 98**	**Windows NT**	**DOS**
Transtition by Timer	Transit by the shorter setting timer comparing between BIOS Setup and OS	Transit by the OS setting time	Transit by theBIOS Setup setting time	Transit by the BIOS Setup setting time

Video Off is recognized as Standby in internal BIOS.
Invalids BIOS Timer in Windows 98.
APM BIOS is in use under Windows 95, therefore, it sends Standby request to the OS and performs Video off funtion by Standby command from the OS.
In other OS, if the BIOS Video Off Timer is timed out, BIOS performs Video Off function.
Transition of the BIOS setting time is possible, if APM BIOS is disabled under Windows 95/98 system.
The difference with the Suspend and Video off is that BIOS does not recognize whether or not the Video is off when turned off the Video with Windows 95/98 timer.

Resume from Video Off Sequence



A2-4 Resume from Video Off Sequence

- If the BIOS turns off the Video, BIOS resume the Video. If the OS turns off the Video, OS resume the Video. Therefore, normally OS resume it under Windows 98 (/ Windows 95) and BIOS resume it under Windows NT/DOS (/ Windows 95). And also, BIOS resume Video if the APM BIOS is disabled under Windows 95/98.

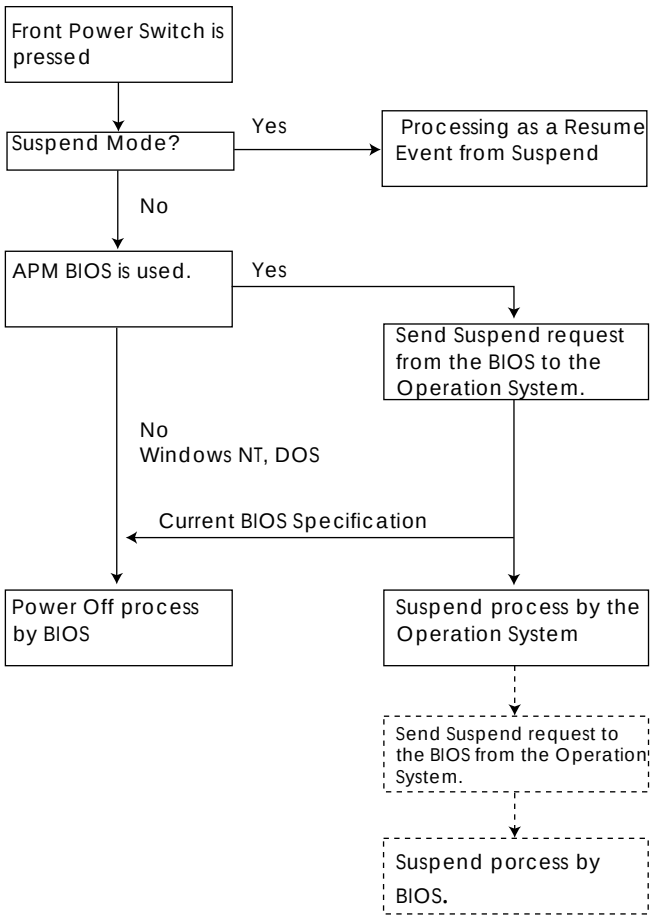
- The resume from the Video Off event enables Reload / Break Event of the BIOS Setup when the BIOS is turned off. However, if it is turned off by the OS, it does not affect Reload / Break Event of BIOS Setup.

Front Power Switch Function

Power Off

In this mode, it forcibly turns down the power by the BIOS. However, it resumes while it is suspended.

Power Off Mode of Front Power Switch Process Sequence



A2-5 Power Off Mode of Front Power Switch Process Sequence

If APM BIOS is in use for the BIOS, Suspend event is sent to OS from BIOS and the BIOS forcibly turns off the power. Therefore, it operates as if it is in Power Off status when it tutns into the Suspend mode in Windows 95/98.
If the main power switch is pressed during the Suspend mode, it turns to resume event and follows “Resume from the Suspend Sequence”(appendix 2-5).
Also, it does not recognize wheather or not the Video is off, therefore it forcibly changes its status to power off.
If the system hungs in this mode and cannot turn off the power, kept pressing the switch for more than 4 seconds and the hardware(Chipset) turns off the power.

Operation according with OS

The table below summarizes for each OS operation.

Table A2-3 Operations under Power Off Mode according with *OS*

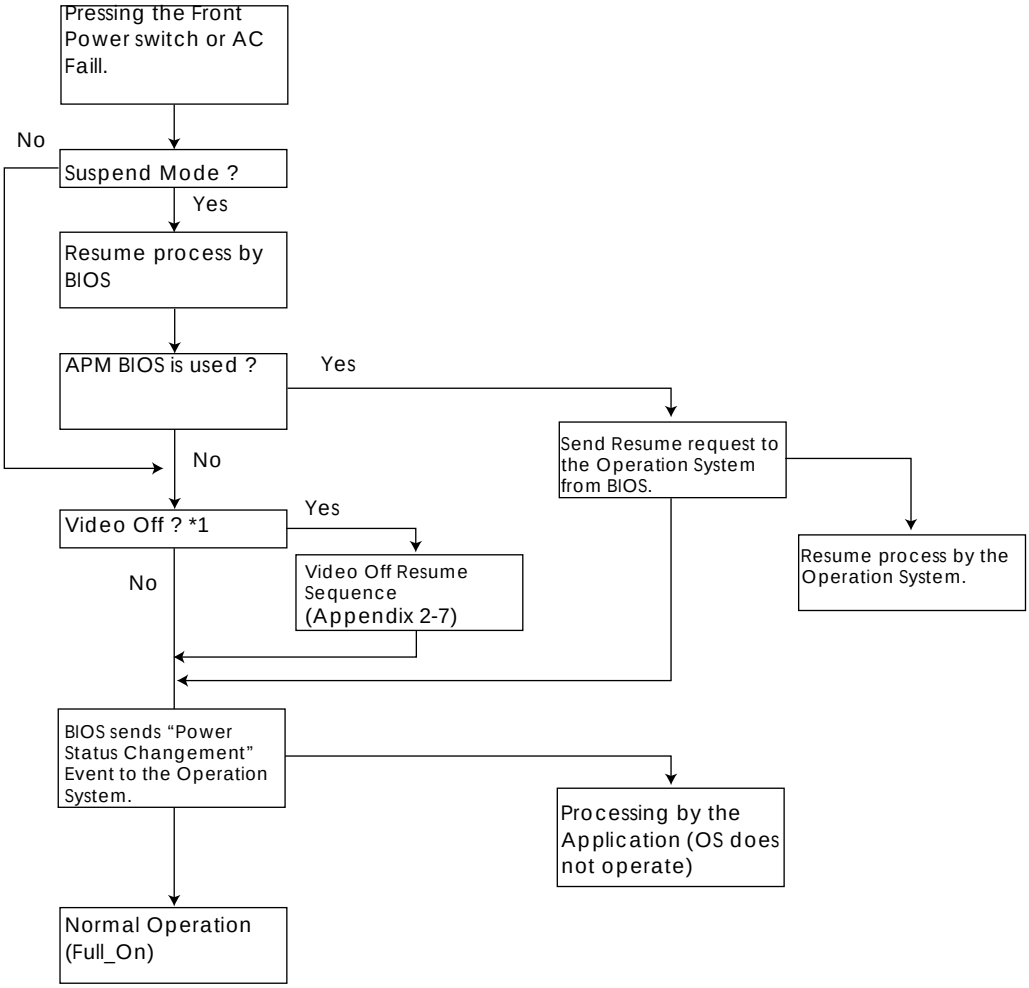
OS	Pressed during Full On	Pressed during VideoOff	Pressed during Suspend
Windows 95	BIOS is Off	BIOS is Off	Resume
Windows 98	BIOS is Off	BIOS is Off	Resume
Windows NT, DOS	BIOS is Off	BIOS is Off	Resume

When the APM BIOS is disabled, it performs same operation as it does under windows NT/DOS for Windows 95/98.

APM Power Off

If the AC Fail is occured or Front Switch is pressed in this mode, BIOS sends APM event: "Power mode changed" to the OS and does not turn off the power. OS does nothing in this event. If the system is set as default that this event is performed by the application, then the rest of the operation is performed by the application. Also, this event is same as for the event when the front power switch is pressed in AC Fail mode. If the mode is changed, the application does not recognize how the mode is changed.
If the front power switch is pressed for more than four seconds, the hardware (Chipset) turns off the power.

APM Power Off Mode of the Front Power Switch Process Sequence



A2-6 APM Power Off Mode of the Front Power Switch Process Sequence

*1:Defines whether or not BIOS performed Video Off. If the OS is performing Video Off, Bios cannot recognize whether Video is off or on.

*2:When APM BIOS is disabled(include Windows NT/DOS), the even may not be sent. Even if the event is sent, the event is not received by the OS nor application while APM is not in use.

Operation accoding with OS

The table below summarizes for each BIOS process.

Table A2-4 BIOS Operation in APM Power Off Mode

Pressed during Full On	Pressed during Video Off	Pressed during Suspend
• Notify the power status changement event	• When the Video Off is recognized, Video is on • Notify the power status changement event	• Resume Process • Request resume to OS • Notify the power status changement event

The table below summarizes for each OS operation.

Table A2-5 APM Power Off Mode Operation according with OS

OS	Pressed during Full On	Pressed during Video Off	Pressed during Suspend
Windows 95	Depends on application	When the BIOS Timer is off, Video is On. When the OS Timer is off, Video is off and the rest of the operation depends on the application.	Resume to Full On. The rest of the operation depends on the application.
Windows 98	Depends on application	Video off Depends on the applicaion.	Resume to Full On. The rest of the operation depends on the application
Windows NT DOS	no operation	Video On	Resume to Full On.
Windows NT+APM	Depends on application	Video On The rest of the operation depends on the application	Resume to Full On The rest of the operation depends on the application

When the APM BIOS is disabled, it performs same operation as it does under windows NT/DOS for Windows 95/98.

Recommended Setting according with Operation

The table below summarizes for each OS recommended setting.

Table A2-6 Recommended Setting According with Operation

OS	Operation	Front Power Switch Function	Video Off Timer	Suspend Timer
Windows 95	24h	APM Power Off	Set the time from OS or BIOS *1	Set the time from BIOS *2
	Not 24h	APM Power Off	Set the time from OS or BIOS *1	Time setting is not necessary
Windows 98	24h	APM Power Off	Set the time from OS *3	Set the time from OS *3
	Not 24h	APM Power Off	Set the time from OS *3	Time setting is not necessary
Windows NT	24h	APM Power Off	Set the time from BIOS	Setting is prohibited
	Not 24h	Power Off	Setting is prohibited	Setting is prohibited
DOS	24h	APM Power Off	Set the time from BIOS	Set the time from BIOS
	Not 24h	Power Off	Setting is prohibited	Set the time from BIOS
Windows NT+APM	with Battery	APM Power Off	Set the time from BIOS	Setting is prohibited

*1: If the time is set from the OS and BIOS, LCD (Monitor) is turned off following the shorter time set between two.
*2: Start Suspend Mode time setting is not supported by Windows 95.
*3 : Change in time setting from BIOS Setup is invalid.

Restrictions

The table below summarizes for the restrictions related to OS current power management (Ver. 1.03.x).

Table A2-7 Restrictions

No.	contents	cause
1	Press the front power switch when the front power switch is turned off and the system is in Video Off status to turn off the power.	While the front power switch is pressed, BIOS does not recognize whether or not BIOS is in Video Off status.

Appendix 3
Wake On LAN

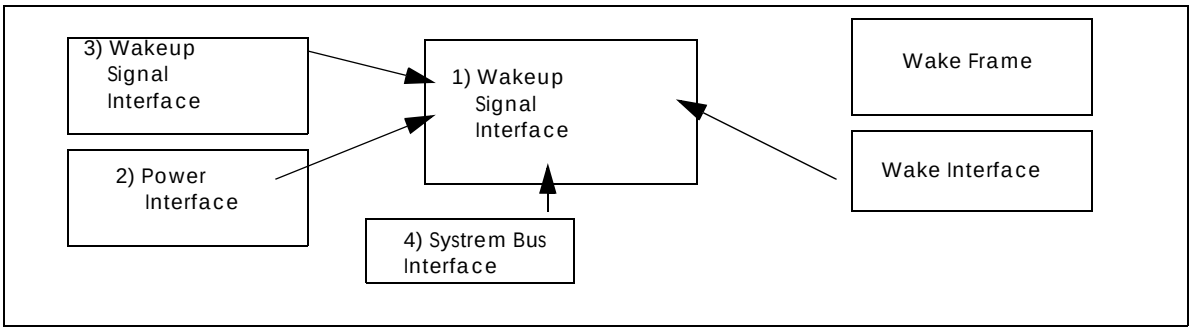
Descriptions

Aim of the Wake On LAN

The Wake On LAN function makes it possible for a one machine connected to the LAN to remotely turn on another machine also connected to that LAN. It can also be used to trigger a resume from the Suspend state. This means that a host server can manage the power states on all machines, with no needs for individual operators to turn their front power switches on. The server can also monitor client states or be used for maintenance without the engineer having to physically visit each machine.

Configurations of Wake On LAN

The client is required the configurations below to performWake on LAN. The host is also required the Client Control Funtion such as Wakeup Frame Transfer Function. Basic Configuration diagram is described below:



A3-1 Configuration Concept

- Network Adapter

  The adapter connected to the Network. It is called Wake on LAN compliant Network Adapter to distinguish with the ordinary Network Adapter. This adapter is used for both Onboard and additional connection to Card Slot. It is required to be structed that the client main power can be controlled by the host's command. In SR-600, Network Chip is mounted on the POS Board for this requirement.

- Power Interface

  The Power Unit providing full-time power supply (5V) is required for the Network Adapter to bootup according with the command from the host. The configuration of the Power Unit does not matter if its configuration can perform the Power Control according with the command from the host. However, normally electric power is provided by the client's Power Unit. In IM-600, all the configurations include Power Unit is provided by the Onboard.

- Wakeup Signal Interface

  This interface receives Remote Wakeup Frame from the host, and notify the contents to the client's Remote Wakeup Frame Decoder. In IM-600, this interface is also provided by the Onboard.

- System Bus Interface

  This interface is used for read or write the System Control Infomation set for the Remote Wakeup. In IM-600, this interface is also provided by the Onboard.

- Remote Wakeup Software

  The configurations summarized here is normally performed by the hardware. Howeve, the software, that defines Wakeup Frame as Wakeup Event and controlls these hardware, is also required. This software is normally provided by writable supplies such as Flash-ROM. In IM-600, Flash-ROM is provided by Onboard.

- Remote Wakeup Frame Decoder

  It decodes the Remote Wakeup Frame received via Wakeup Signal Interface, and analyzes whether or not its MAC Adress is included in the received Wakeup Frame. In IM-600, the Decoder is also mounted in the Network Chip.

Software Setting

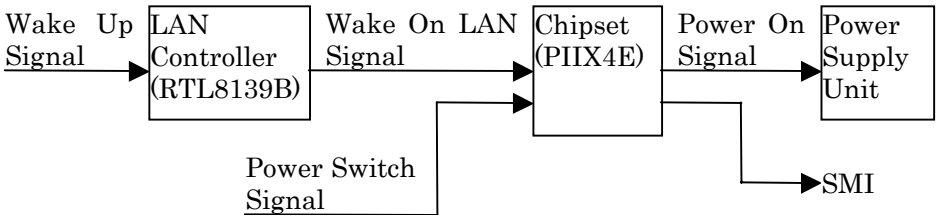
BIOS Setting

It is required to set the following items from the BIOS Setup to enables Wake On LAN.

[Wake Up On LAN] from the [POWER MANAGEMENT SETUP].

Disable:	Wake On LAN Disabled
Enable:	Wake On LAN Enabled

It is possible to activate the Wake Up form the Wake On LAN by setting it to enable. It sets whether or not the Chipset (A3-2) can receive Wake On LAN signal. It is not for the LAN Controller setting.



A3-2 Wake On LAN Signal Circuit

Note:

BIOS performs this setting to the Chipset while the power is turned off. When the power is on, it is always set at Disable. Therefore, when the main power switch is pressed for more than 4 seconds and turned it off, the power is turned off not without going through BIOS and it is set at Disable regardless of its setting.

When it turns into Suspend mode, the resume from the Suspend is always available since BIOS is always set at Enable.

When the AC power is input (if OI-R03 is not avaiable), Chipset setting is resume to its default setting and the BIOS setting cannot be reflected. Therefore, the default Wake On LAN is turned on by the hardware regardless of the BIOS setting.

Network Wake-Up Frames

This method does not require a special data pattern, unlike Magic Packet. If this mode is enabled, a Wake Up request is issued when a special frame is detected within communication frames.

Wake Up frames are of the following types:

- ARP request

Ethernet makes use of MAC (media access control) addresses, so the MAC address must be determined in some way. This is handled by ARP (address resolution protocol). When a packet is sent via IP, it is essential to determine what the MAC address of the network destination is, which is achieved by broadcasting an ARP packet including the destination IP address. The machine with the specified IP address returns its MAC address to the originating machine. To increase packet transmission speed and reduce the number of broadcast requests to be checked by networked machines, each machine is provided with an ARP cache. Each time an ARP request is sent and a response received, an entry is made in the machine internal ARP cache showing the correspondence between IP address and MAC address. When the machine issues an IP packet, it first searches for that IP address in its internal cache, and uses the MAC address if found there. If it is not found, it broadcasts an ARP request.

- NetBIOS name search

  The NetBIOS name is the computer name, user name or domain name assigned to the machine (a name with a unique 16th byte). When network services are used, the IP address assigned to this NetBIOS name must be known. The most common way to determine the IP address from the NetBIOS address is to broadcast a packet including the target NetBIOS name. The corresponding computer receives the packet and it will respond, then resolve the IP address.

  Again, the correspondence between the NetBIOS name and IP address is stored in the machine internal ARP cache.

- IP frames sent to machines

  These frames use the IP protocol, and are sent directly to the correct MAC address.

These packets may be sent at Windows boot, at NT log-on, and at shutdown for other OS. The ARP packets are used to determine the correspondence between IP and MAC addresses, but may wake up a machine unintentionally during network allocations, or if a machine has been communicated with previously.

Function Details

Wake on LAN Sequence

The descriptions of the Client Wakeup Sequence from the Wake on LAN is listed below:

1)Wakeup Frame (such as Magic Packet) is sent to the Network from the host.

2)The client Network Adapter receives Wakeup Frame.

3) The client defines whether its Wake on LAN setting is enable or not.
If it set at disable, the rest of the process is not operated.
Also, this setting is normally stored in CMOS.

4) Decode the destination of the Wakeup Frame received
MAC Address, that is a specific address provided to the each client, is used for the decode. If this address is included in the received Wakeup Frame, it means that the client requested the Wakeup.

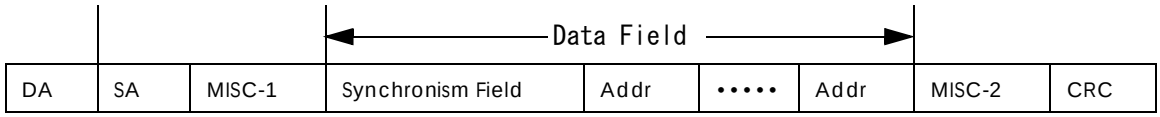
5) Wakeup Signal issue
If the Wakeup Frame is found, it issues Wakeup Signal. If it's not found, the process is not peformed.

6) Client Power On

7) Normal Bootup
The normal POST(BIOS bootup) is performed like Power On by Front Switch.

Wakeup Frame

It is a Network data to wakeup the client from the host using the Wake on LAN function. The special Data Field different from the Packet Data transmitted on the normal Network is included. Wakeup Frame is decoded by the client's Network Adapter compliant with the Wake on LAN and defined as event issued by the Wakeup Signal. The Wakeup Frame Format is shown in the table below.



In addition, the Data Field is defined as special that the Client MAC Address is repeated for 16 times in the Address Field after the Hardware Synchonism Field. For example, the Client Wakeup Frame that carries that carries [11h, 22h, 33h, 44h, 55h and 66h] MAC address is a Packet Data as explained in the table below.

Table A3-1 Packet Data

Data	Description
xxxxxxxxxxxxh	Destination Address consists of 6 byte. This Address is specified as Fixed Address or Broadcast Address. If the fixed Address is specified, Wakeup Frame is enabled for the client with that address. However, the Client is in Power Off mode, Data Transfer is not performed and it can be deleted on other Node by the Routing Table or Internal Cache depends on the Protocol. Also, the destination of the address is unkown for the Router and Node. Therefore, the Wakeup Address directly addressed to the terget client is deleted. This problems can be solved using the Broadcast Address. In the Directivity Multiaddress Calling, Router and Node forward the address to the appropriate Network since it carries Network Address and Multiaddress Calling Host Address. Therefore, it can detect the Directivity Multiaddress Calling as MAC Level Multiaddress Calling even if the client is on the Power Off mode.
yyyyyyyyyyyyh	Source Address consiists of 6 byte.
MISC-1	Such as IP Header.
FFFFFFFFFFFFh	Data Field consists of theHardware Synchonism Field and Address Field.
112233445566h	Hardware Synchonism Field consists of 6 byte and coordinated with FFh byte contents.
112233445566h	
:	MAC Address of the Terget Client for the Target Client is repeated 16 times in the Address Field, and it cannot find in other Network Frame.
:	This Data Field can be repeated in a single Wakeup Frame.
:	In other words, single Wakeup Frame can send Wakeup command to several . clients
112233445566h	
112233445566h	
MISC-2	Option data same as other Network Frame
CRC	Dedicated Data added for Error Check. CRC include CRC-12, CRC-16, CRC-32 etc, normally CRC-32 with 32 bit Length is applied to the Network.

Wake Up LAN Operation for Each OS

The table below summarizes operation for each OS and Wake Up methods. Wake Up Frame is supported only in Windows 98, but operation is currently being verified.

Table A3-2 Wake On LAN Operation Summary

BIOS Setting	WakeUP Method	Software Off			Suspend	
		Normal Off *1		Power Off by Pressing for 4 seconds		
		Win98	Win95/NT		Win98	Win95/NT
Enable	WakeUp Frame	○ *2	×	×	○ *2	×
	Magic Packet	○	○	×	○	○
Disable	WakeUp Frame	×	×	×	○ *2	×
	Magic Packet	×	×	×	○	○

○:Wake Up ×:Do Nothing

*1:Normal Off indicates using the front switch to turn off power when the Main Power Switch Function is set to Power Off, or when the OS shuts down.

*2:Under Windows 98, the Wake Up Frame can be disabled in the driver setup.

References

MAC Address

A machine's MAC address can be checked through the following methods:

- Windows95/98

  Execute winipcfg from the command line.

- WindowsNT/2000

  Execute ipconfig /all from the command line.

Appendix 4
COM3 Mode

Description

There are three modes in COM3 of IM-600.

- ❏ Mode 0
- ❏ Mode 1
- ❏ Mode 2

These modes can be changed in Integrated Peripheral - COM3 from the BIOS Setup. Iurposes and features of each mode are explained beloow:

Mode 0

Mode 0 = Normal (displayed during the BIOS setup)

This setting is a default value of the BIOS. Set to this Mode when connecting the optional peripherals such as Modem to COM3.

TM can also be connected to COM3 when it is set to the Normal Mode.

The operations of DM-D connected with the DRW Board and dedicated Port with this Mode are:

-DRW Board :It does not operate.(CRT display is available)

-DM-D :If optional peripheral is not connected to COM3 Port, the customer display is connectable.

Mode 1

Mode 1 = TM / DM-D (displayed during the BIOS setup)

The operation of TM-T88II and some of the EPSON TM is assured at this Mode with COM3 connection.

DM-D, that is connected with dedicated connector, and the flow control by the hardware (RTS / CTS) is available at this Mode. TM and DM-D are in Hydra connection. The flow control of TM is (DSR / DTR). Use the cross cable which supports this control.

- DRW Board :It does not operate even if it is connected.(CRT display is available)

Mode 2

Mode 2 = DRW / DM-D (displayed during the BIOS setup)

You must set to this mode to equip the optional dedicated DRW Board.

COM3 input signal recognized by Host is only connected to DRW board or DM-D dedicated connecter at this Mode. Therefore, its operation is not guaranteed with COM3 D-sub connector connected.

DRW board and DM-D dedicated connecter are in Hydra connection as listed below.

- DRW Hardware Flow control is DSR / DTR

- DM-D Hardware Flow control is RTS / CTS

COM3 Mode Seting Specification

Table A4-1 COM3 Mode Setting and Status of each ports

	COM3	DM-D dedicated port	Drawer Board
Mode0 Normal	O/ DTR/DSR, RTS/CTS	▲*1/ X-on/X-off only	×/CRT is available
Mode1 TM/DM-D	▲*2/ DTR/DSR	O/ RTS/CTS	×/CRT is available
Mode2 DRW/DM-D	×	O/ RTS/CTS	O/ DTR/DSR

*1:The customer display can be connected if any optional peropheral is connected to COM3 port. Only DM-D that controls software flow can be used in this case.

*2:SOme of the TM printer (TM-88II) can be used.

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